Better Homes and Gardens®

10th ANNIVERSARY ISSUE

WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE

SEPTEMBER 1994 • ISSUE NO. 72
Please display until November 10

WELCOME TO IDEA SHOP™ 2

- Projects galore
- Editor's-choice tools
- Shop heating & ventilation
- Dust-collection solutions
- Tool-storage options

Build this all-purpose
MOBILE WORKBENCH
Complete plans on page 46

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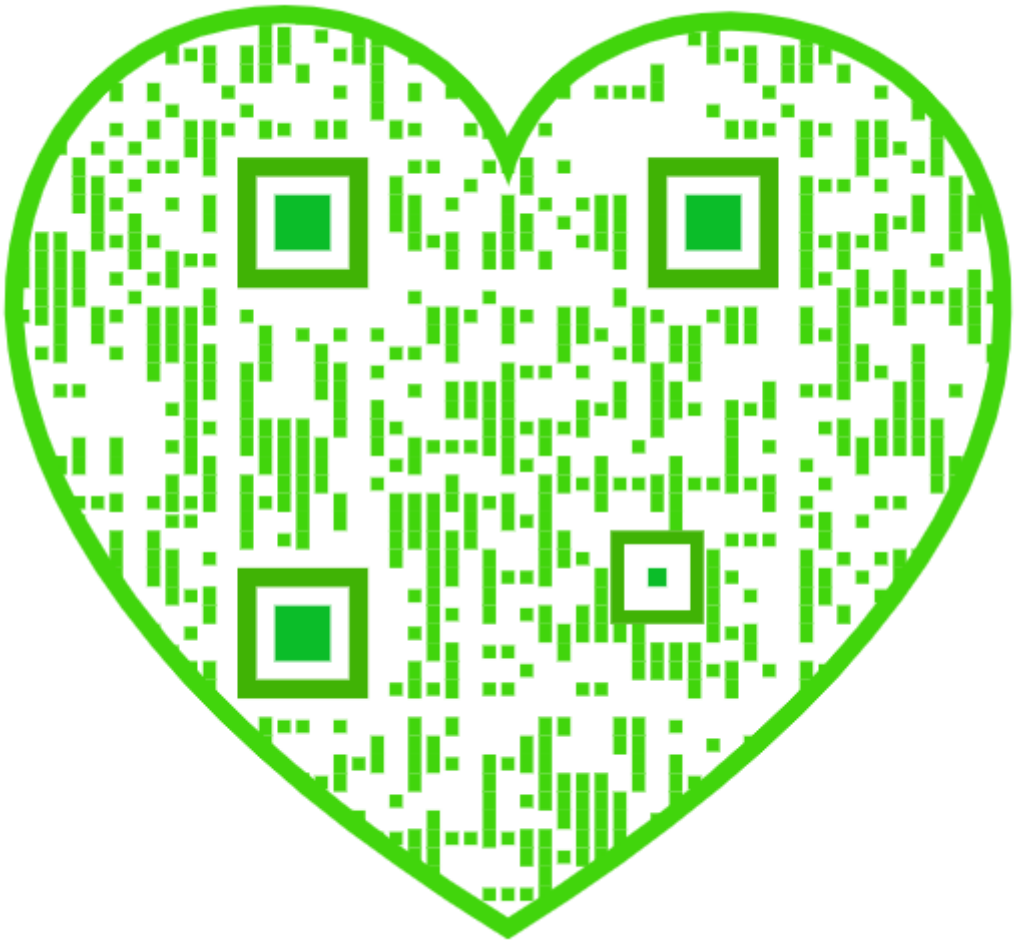

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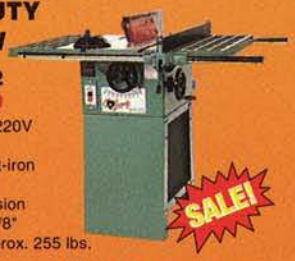

10" TILTING ARBOR SUPER HEAVY-DUTY TABLE SAW
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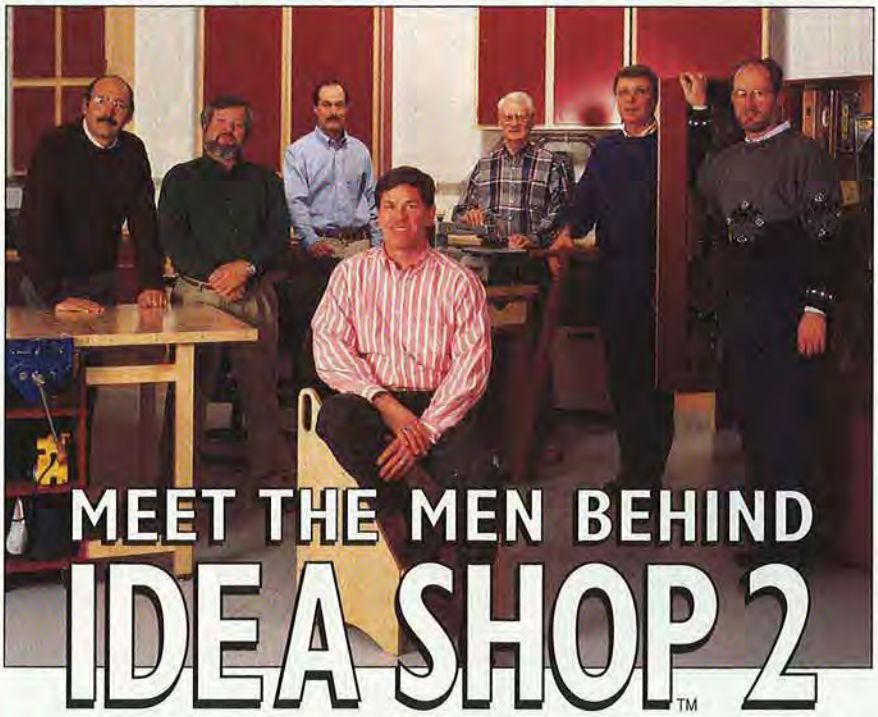
EDITOR'S ANGLE



Taking a breather in the now-completed IDEA SHOP 2 (from left to right): Jim Harrold, Jim Downing, Bill Krier, me, Don Wipperman, Chuck Hedlund, and Jim Boelling.

Readers, I've got to be honest with you. After we completed our first IDEA SHOP in 1992, I wondered how we'd ever manage to match that effort. At the time, it seemed like we had used up every available good idea and included it in that shop. So, even though I didn't share my sentiments with the staff, it was with some trepidation that I asked for volunteers to help create our encore effort, IDEA SHOP 2—THE GARAGE.

As you'll see on *page 42* where our shop tour begins, my doubts were unfounded. In many ways, this shop is even better than our first. Why? For one thing, it cost us a lot less to build and equip. For another, this one fits into a space that most of you already have. And believe it or not, IDEA SHOP 2 actually has more ideas in it than the first one did.

I won't spoil your fun by revealing more about the shop here, but I do want to single out some people without whom this project would not have been possible. First, I'd like to thank *WOOD®* magazine staffers Jim Harrold, Jim Downing, Jim Boelling, and Bill Krier for helping plan, design, and execute our vision.

My hat also goes off to Don Wipperman and Chuck Hedlund—two of the most experienced and gifted cabinet builders around—for helping us build several of the projects. Guys, you came through when the schedule got tight.

Two of our loyal readers also figured prominently in the success of our effort. Erv Roberts of Des Moines, Iowa, shared with us his design for the drop-leaf workbench featured in the shop. And Arthur Van Den Berg of Two Rivers, Wisconsin, tipped us off to his tool-mover design. Thanks, fellas; we appreciate your valuable input.

And last but not least, let's have three cheers for the manufacturers and suppliers who worked with us in outfitting our shop. They're all listed on *page 68.*

Photograph: Wm. Hopkins

Larry Clayton

Print this article

Better Homes and Gardens®
WOOD®
THE WORLD'S LEADING WOODWORKING MAGAZINE

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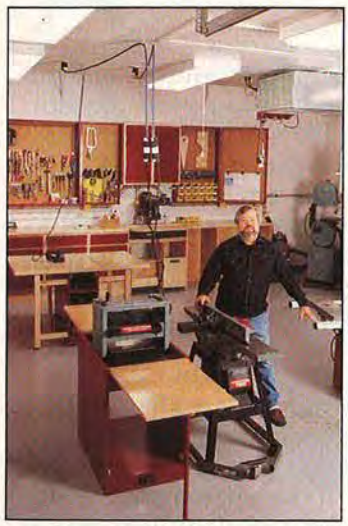
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This issue's cover wood grain: Butternut

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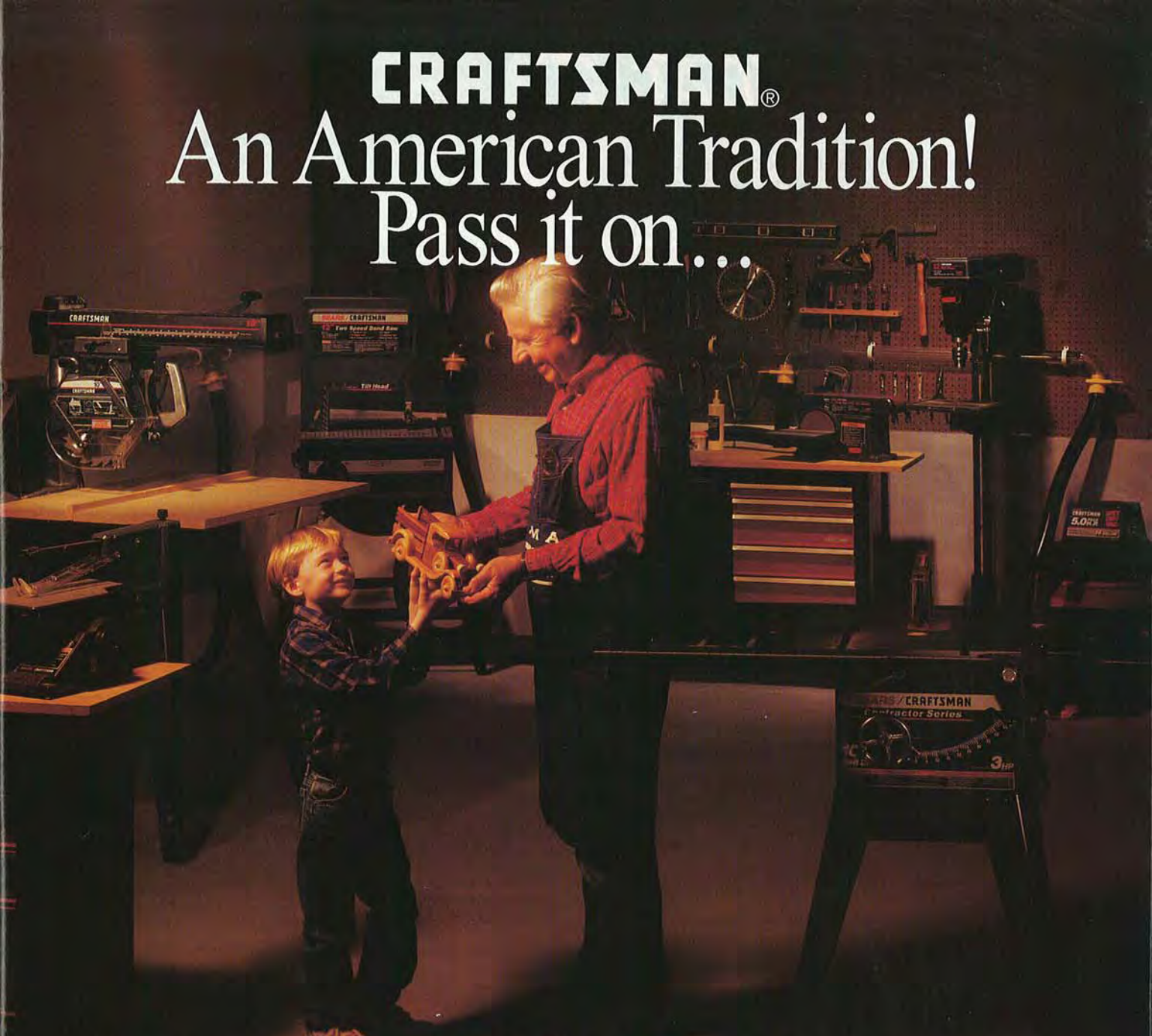

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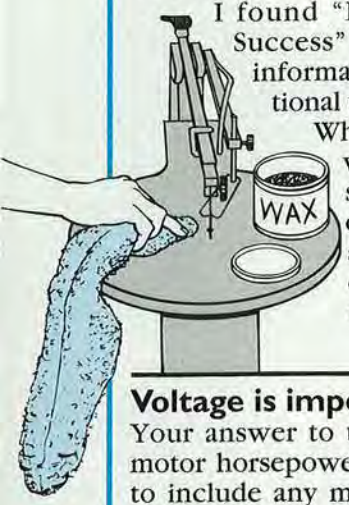
TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, *Better Homes and Gardens® WOOD®* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Waxed scrollsaw table increases control



I found "Rick's Tricks for Scrollsawing Success" from the December 1993 issue informative and helpful. I have an additional tip.

When sawing pine or other resinous woods, the wood will sometimes stick to the table and cause the cut to veer off the cut line. For a solution to this problem, I apply a coat of paste wax to the scrollsaw table, and I'm back on line.

—John Garland, Lesterville, Mo.

Voltage is important, too

Your answer to the "Ask *WOOD*" question about motor horsepower in the January 1994 issue failed to include any mention of voltage of the motors. For the novice comparing motors on amperage draw only, this can be a problem. The comparison must be made on motors of the same voltage (110 or 220 volts) to be valid.

—H. R. McKenzie, Tyler, Texas

Spinning your brush finishes the job

The "Brush Basics" article in the January 1994 issue was an informative one on brush selection and care. Your advice to avoid skimping on brush quality makes good sense, but the article did not mention the use of a "brush spinner" for final cleaning. I use one made by Shur-Line Mfg. of Lancaster, N.Y., to spin the brush and release the final cleaning residue inside a bucket or trash can.

—William B. Graham, Tujunga, Calif.

We contacted Shur-Line Mfg. at 716/683-2500, and found out that this brush spinner also works for cleaning paint rollers.

Safer rust removal

Several years ago, the Early American Industries Association published a rust-removal process similar to the one you printed in the September 1993 issue of *WOOD®* magazine. The following issue of the association's bulletin immediately pointed out not only the danger of using lye, but also a much safer substitute: sodium carbonate. I have found sodium carbonate in grocery stores in the form of Arm & Hammer Washing Soda, a detergent booster.

The EAIA article recommends using a heaping teaspoon of sodium carbonate per quart of water. A stronger solution can be used, but will not speed up the process very much. You must still use care in handling this product.

—Robert C. Brackett, Hendersonville, N.C.

That's some stubborn plank!

The "Wood Anecdote" in the February 1994 issue brought back a memory. I was stationed at Milne Bay, New Guinea, during World War II. We found a 2"×12"×16' plank that was left from a ship's dunnage (cargo supports and bracing), and we needed to move it out of our way. It was so heavy it took two men to just budge it.

My platoon officer ordered me to get an axe and chop the plank in half. I took one good lick at the board, and it was hardly dented. We finally ended up dragging the thing into the jungle and leaving it there. It's probably still there for all I know.

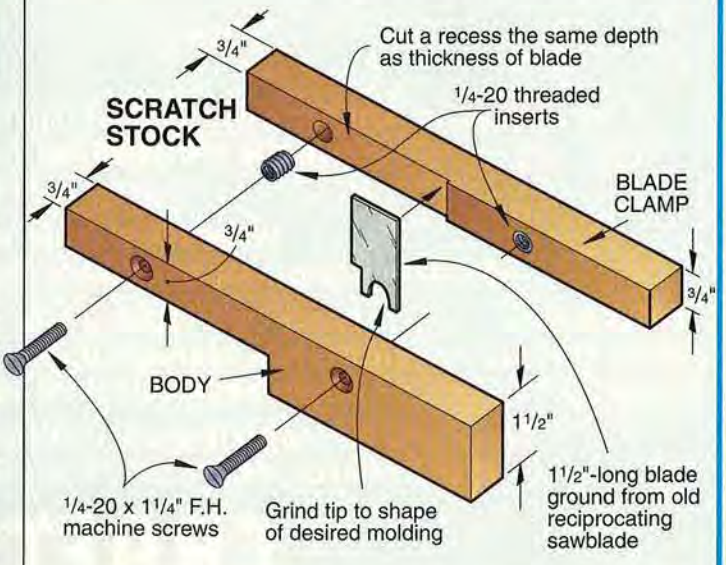
For lack of identification, we called that plank "ironwood." I now wonder if it could have been the "turpentine" wood you wrote about in your article. I have worked with several hardwoods, including hard maple, and none of these were as hard as that mystery plank.

—E. H. Vandemark, Dunsmuir, Colo.

New design of an old tool

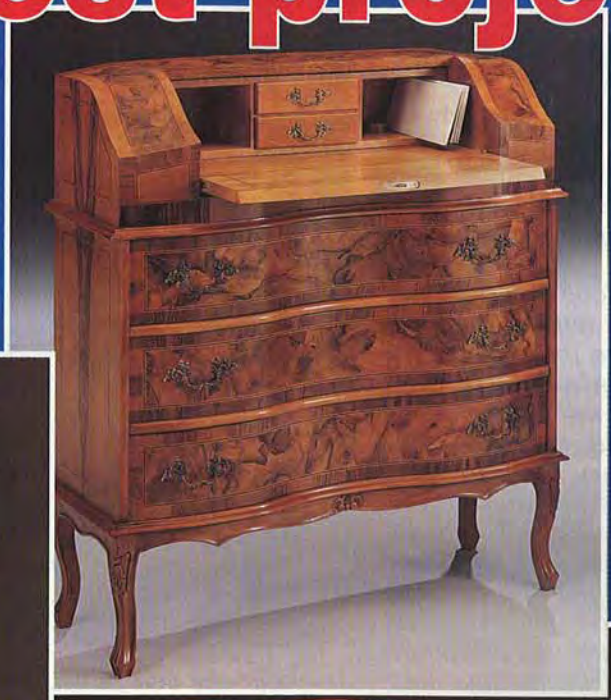
In the article "He Makes Old Tools Sing Again" in the September 1993 issue, Jim Price mentioned an old tool called a scratch stock that intrigued me. I tried to buy one of these tools, but couldn't find a supplier. After a little research and experimentation, I came up with the design shown *below*, and used it for making my version of a scratch stock. I grind my scratch-stock blades from dull or broken reciprocating-saw blades.

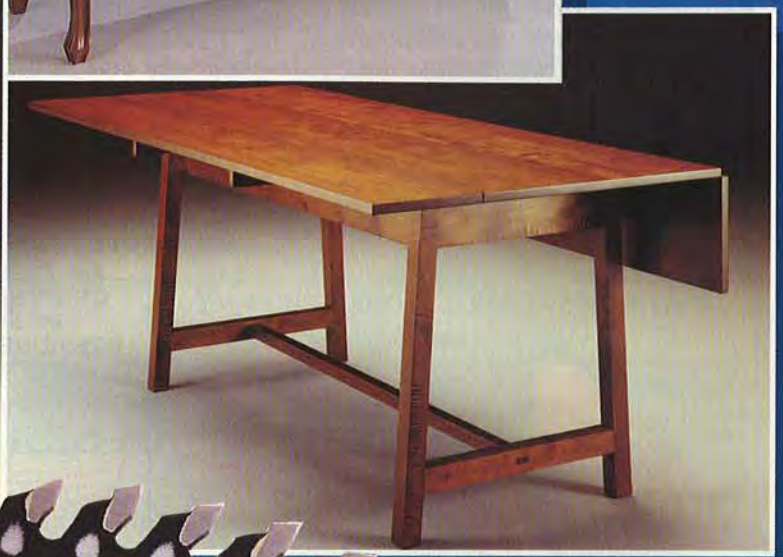
—Richard A. Murphy, Clifton Park, N.Y.



Continued on page 6

Your best projects





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14"	108	1"
15"	108	1"

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TALKING BACK

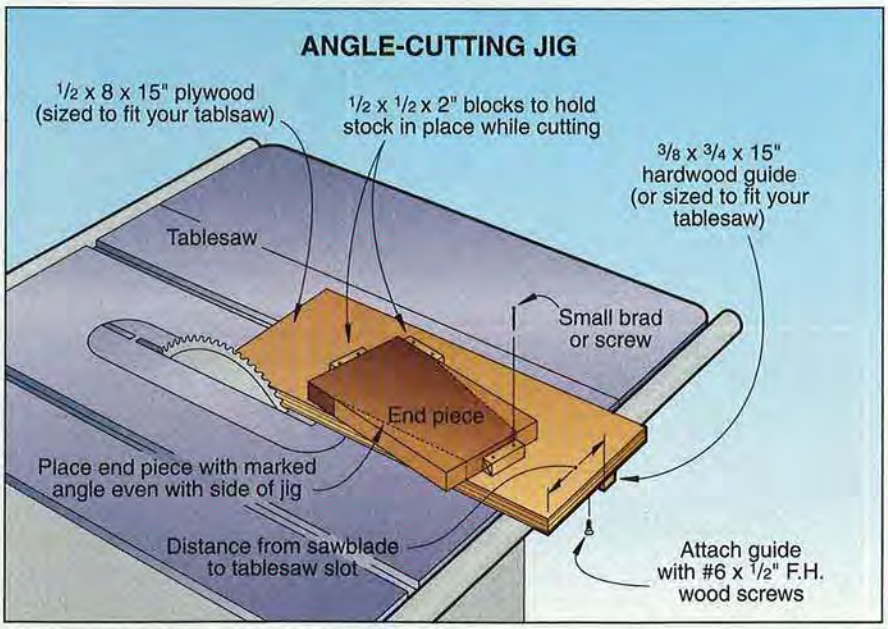
Continued from page 4

An angle on cutting tapered workpieces

How can I accurately and safely cut the angles on the ends of the "Seeds & Such Snack Shop" from the September 1993 issue?

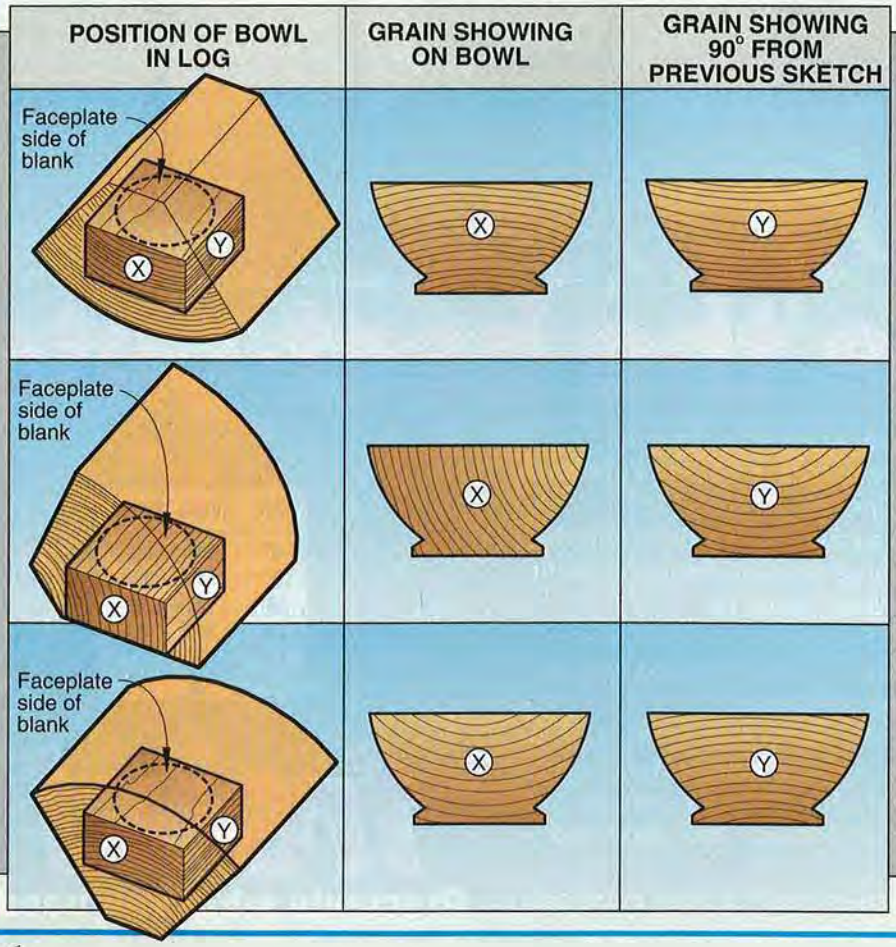
—Bill Rettinger, Haddonfield, N.J.

Bill, we cut the long angles on our bird-feeder ends with a bandsaw, and then sanded the edges to the pattern line on a disc sander. However, if you are making several feeders, we suggest you use the tablesaw jig shown in the drawing right. *Make this jig from 1/4" plywood, fastened to a 3/8 × 3/4 × 15" (or sized to fit your saw) hardwood guide for the miter-gauge slot. Measure the distance from the miter-gauge slot to the sawblade, and add 1/16". Transfer this measurement to the plywood base, and glue and screw the hardwood guide outside of these marks. Then, cut the jig to size by placing it in the miter-gauge slot and passing it through the blade.*


ANGLE-CUTTING JIG
1/2 x 8 x 15" plywood (sized to fit your tablsaw)
1/2 x 1/2 x 2" blocks to hold stock in place while cutting
3/8 x 3/4 x 15" hardwood guide (or sized to fit your tablesaw)
Tablesaw
Small brad or screw
End piece
Place end piece with marked angle even with side of jig
Distance from sawblade to tablesaw slot
Attach guide with #6 x 1/2" F.H. wood screws

To make the end panels, first cut them to the size listed in the cutting diagram in the bird-feeder article. Draw the long side angles on one end piece, and use this end as a guide for mounting the small placement blocks on the jig. Fasten these blocks in place with brads or small screws.

Place the end piece in the jig, and cut an angle on one side. Turn the end over, and cut the second angle. You can now produce as many bird-feeder ends as you wish.



Where's the bowl in this log?

The Ask *WOOD* answer "Check those cracks" from the December 1993 issue raised a question: Which is the best side of a bowl blank to fasten to the faceplate?

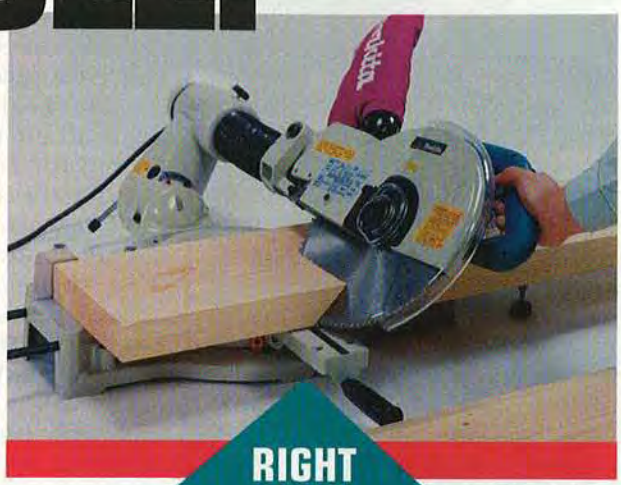
—Ted Lucas, Alpena, Mich.

We prefer to mount the bowl blank with its face grain glued to a wooden disk or auxiliary faceplate, Ted. We then fasten this auxiliary faceplate to the lathe faceplate with wood screws.

Otherwise, the determining factor of how to mount a bowl blank to the faceplate will be how you want the grain to appear on the finished bowl. There should be no problem with warpage or cracking, provided that your bowl blank is properly cured. See the drawing right *to determine how mounting the bowl blank on the faceplate will affect the grain direction of the bowl.*

THE FINEST SAW FROM ANY ANGLE.

LEFT BEVEL CUT



RIGHT BEVEL CUT

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Its unique design and powerful 15 AMP motor allow miter, bevel and compound cuts to be made quickly and precisely. And unlike any other saw on the market, the LS1211 can bevel cut up to 45° to the right. What this means is that you can cut virtually any angle with the LS1211.

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Model LS1211

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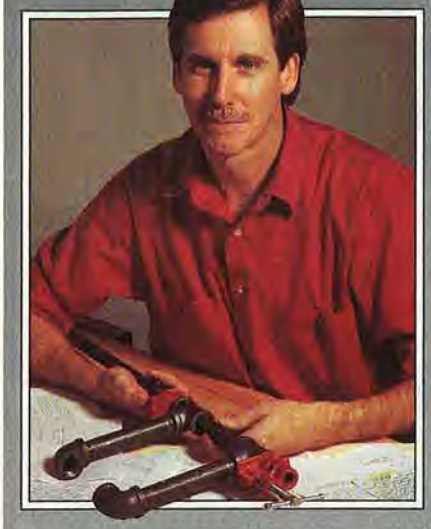
TIPS FROM YOUR SHOP (AND OURS)



When we first saw E. E. Reynold's shop tip for modified pipe clamps, *below right*, some of the staff had doubts. As the general interest editor, I investigate these concerns. So I headed for the hardware store, bought the parts, and gave it a test. Sure enough, it works great.

Tips like these—your ideas mostly—help to make this one of the best-read sections of the magazine. And we want to hear about it the next time you discover a new shortcut, technique, or jig. Just send a brief description of the idea and a drawing or photo to:

Shop Tips
WOOD Magazine
1912 Grand Ave
Des Moines, IA 50309-3379.

We try to avoid shop tips that have appeared in other magazines, so please send yours to only one. Also note we cannot return your submissions.

If we choose your tip for publication, we'll pay you $40, plus you'll get a shot at winning a new tool for submitting the top tip. Thanks, and keep those shop tips coming!

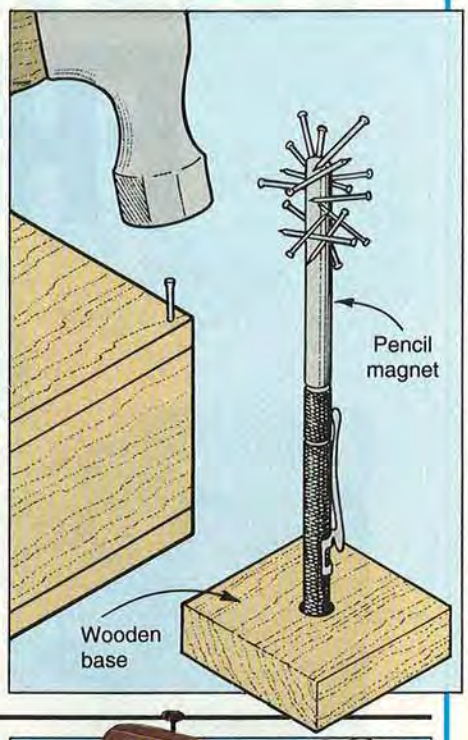
Tom Jackson

Magnet bristling with brads ends pounding headache

You're assembling a project with brads, but you may as well be wearing mittens as you try to pick up the tiny brads from the workbench or out of the box.

TIP: Put a bunch of brads on a magnetic pick-up tool. Drill a hole that fits the handle of your tool in a block of scrapwood. Then, instead of pouring out some brads, poke that pickup tool into the box and bring out a cluster of brads. Stand the tool in the block of wood. Now, pick brads off the magnetic tool one at a time for fumble-free nailing. Don't have a magnetic pick-up tool? Tape a craft-store magnet to a scrap of dowel rod.

—Frank H. Day, Anaconda, Mont.

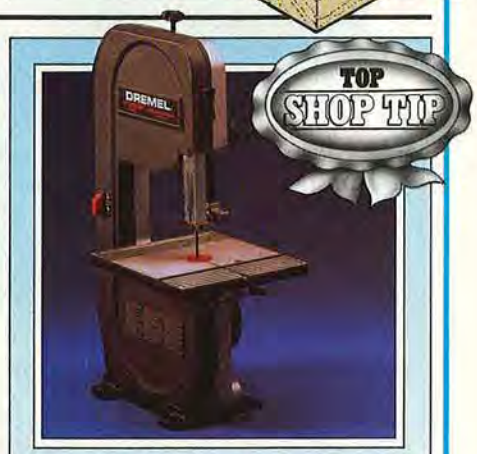


Clamp reaches out with added fittings

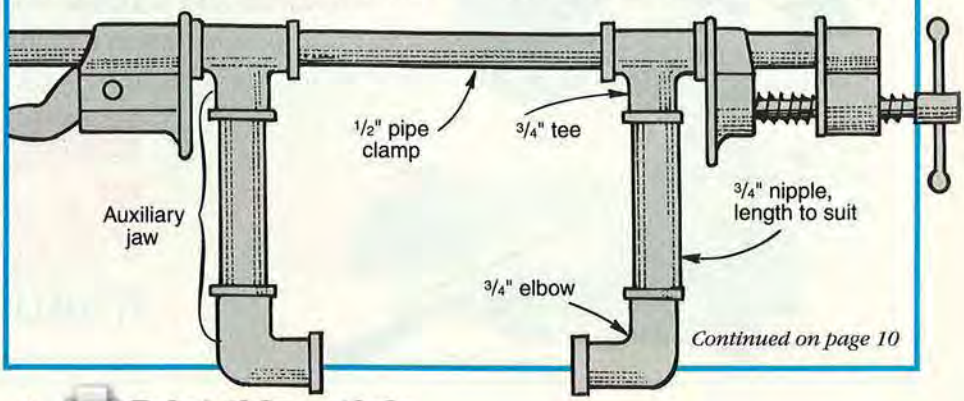
Pipe clamps work best on glue-ups that, like some rivers, are wide but not very deep. So, what do you do when you need a clamp with longer reach?

TIP: Thread together ¾" black-pipe fittings to fabricate a set of sliding extension jaws for a ½" pipe clamp. Pick a nipple length that fits the situation, and then thread a tee fitting on one end, and a 90° elbow on the other. Make two such jaws. Remove the sliding jaw of the pipe clamp and slip the tee fittings over the pipe. with the open ends of the elbows face inward. Replace the sliding jaw, and clamp your project, protecting the wood from the rough iron of the elbows.

—E. E. Reynolds, North Charleston, S.C.



For his tip, E. E. Reynolds will receive this Dremel Model 1120 ½-hp, 10" benchtop bandsaw.



Continued on page 10

In a durability test, the competitor's hammer lasted 60 seconds. If you happen to need one for longer than that, buy a Stanley hammer.

This picture tells the story better than any words can. In our overstrike tests, the Stanley hammer outlasted the competitor's brand by a 4 to 1 ratio.*

You see, after years of research (and a whole lot of sleepless nights) our engineering department concluded that jacketed, solid-core fiberglass is more durable than the compression-molded variety some of our competitors use to make their hammers.

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*Overstrike test conducted by striking hammer handle against metal object. © 1994 The Stanley Works.

TIPS FROM YOUR SHOP (AND OURS)

Continued from page 8

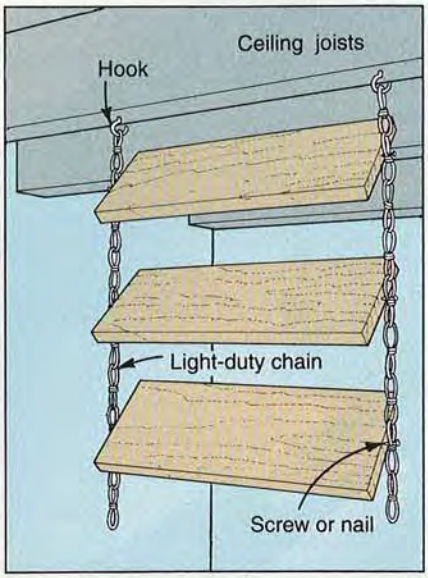
Chains take pains from drying parts

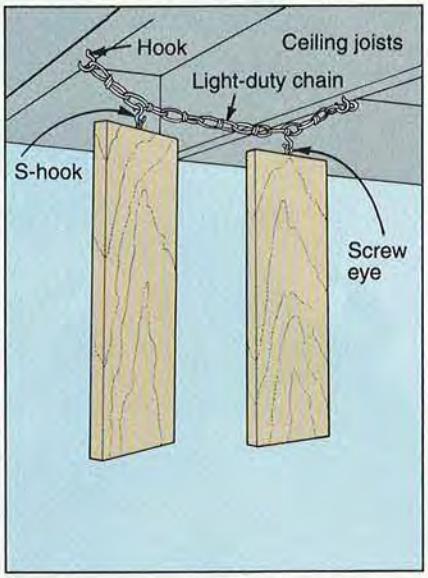
When you have a lot of large parts to finish—such as shelves—spreading them out for drying can take up a lot of space. In a small shop, you may not have that space.

TIP: Chains and ceiling hooks can make drying racks that hold a lot of parts in a little space. Screw the hooks into ceiling joists about 12" from the wall (or other distance, as appropriate). Space the hooks as the parts require, and hang a 7-8' length of chain from each. Light-duty chain, such as the twisted-link variety, will suffice for most projects. On each part to be finished, center a screw or nail at each end. Hang the parts horizontally between the chains, placing the screws or nails into the chain links, as shown in the illustration at *near right.*

Using this same idea, you can hang parts vertically, too. Place a screw eye in one end of each part. Then, loop the chain between two ceiling hooks, and hang the parts from S-hooks on the chain, as shown *below.*

–Richard Trowbridge, Akron, Ohio





Continued on page 12

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TIPS FROM YOUR SHOP (AND OURS)

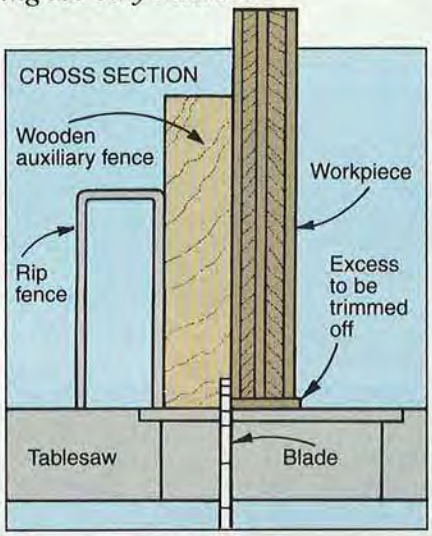
Continued from page 10

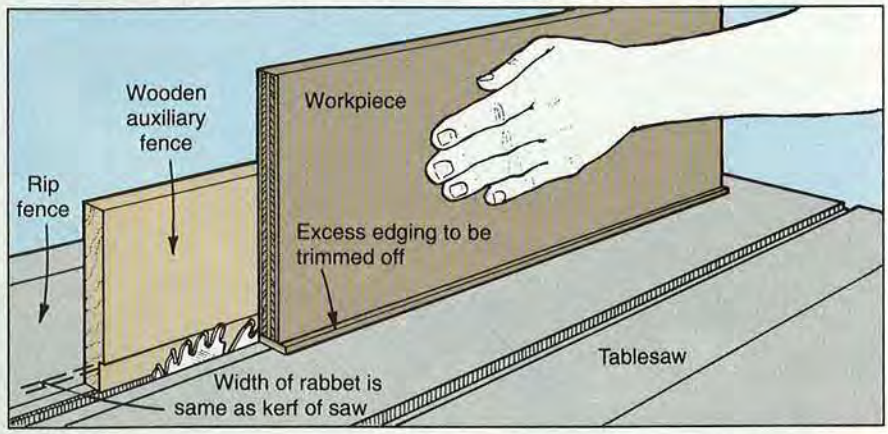
Rabbet on tablesaw fence helps you trim panels flush

You've glued some solid-wood edging on a set of plywood panels and now it's time to trim the edging flush. If you don't have a flush-trim router bit, is hand planing the only solution?

TIP: If you own a tablesaw, you're just an auxiliary fence away from a super-quick solution. Make a 1×6" wooden auxiliary fence for your tablesaw, and cut a rabbet in its face exactly as wide as the kerf of your blade. Attach the auxiliary fence to your regular rip fence and position it so that the outside edge of the blade is flush with the outside face of the auxiliary fence, as shown in the drawings *below left*. Then, run your workpiece along the fence to trim off the excess edging. We use a 50-tooth, carbide-tipped blade for clean, splinter-free results.

—from the WOOD® magazine shop





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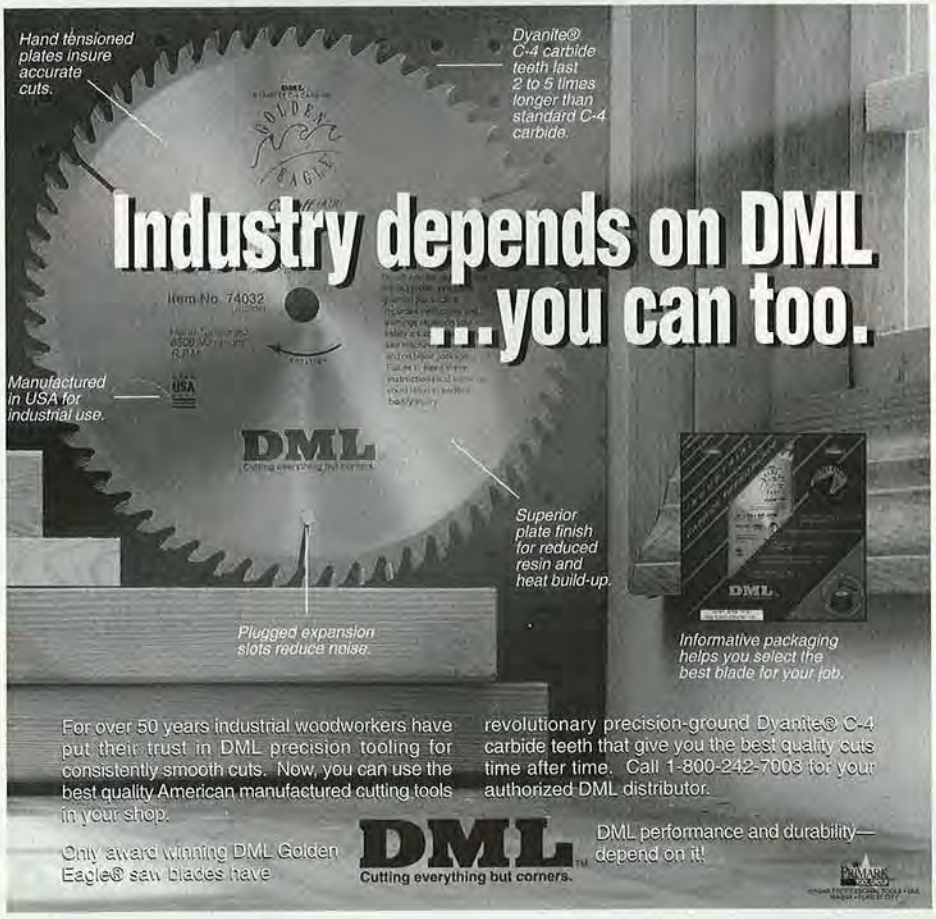
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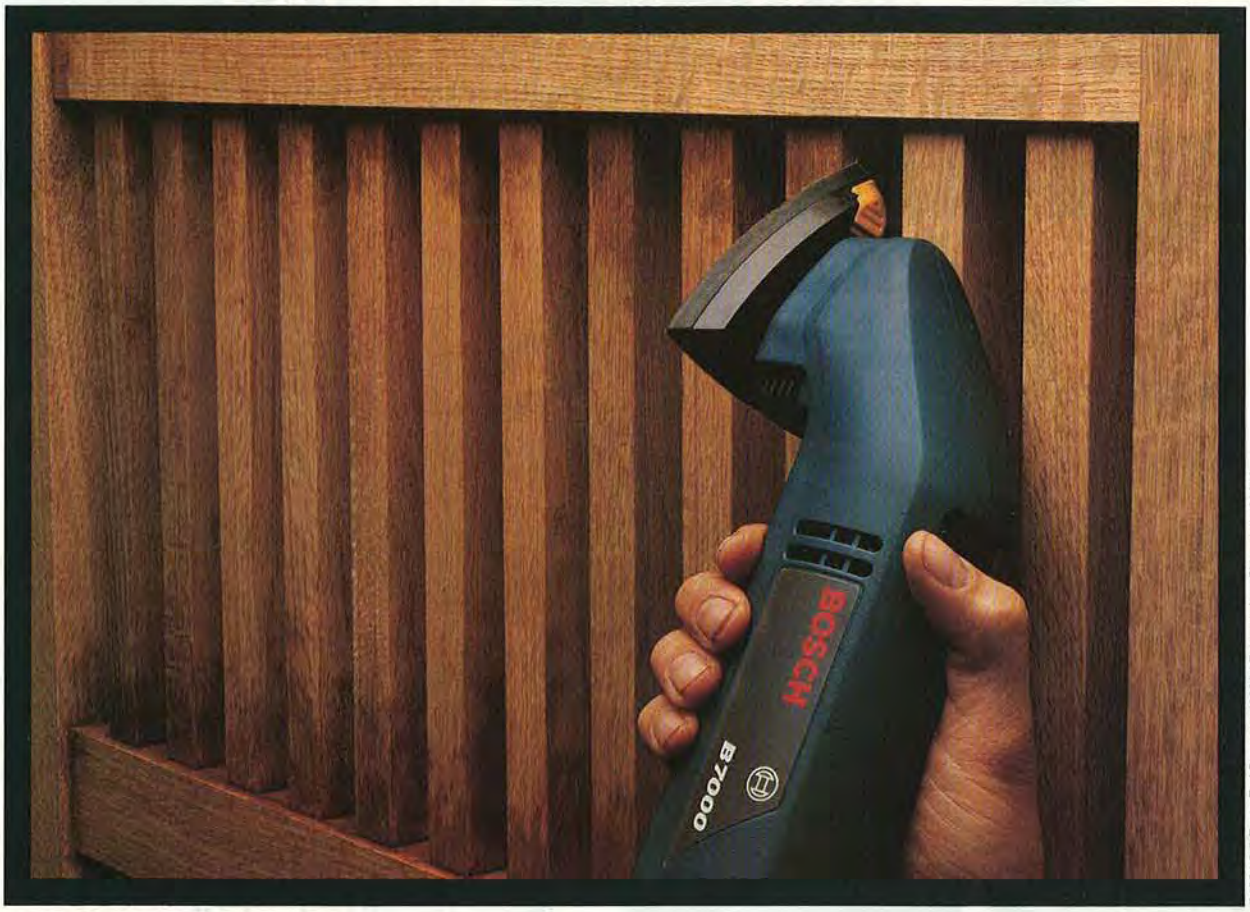
- When a glue dries at or below its chalk point, it dries white and produces a very low-quality bond.
- If the glue you are using dries uncharacteristically white, it has likely dried too cold. In this case, sand off the white film of glue, allow the materials being bonded to warm up, then reglue.
- Remember, the glue in the bondline will dry at the temperature of the wood, so make sure the wood itself is above the chalk point of the glue.

For more information call 1-800-347-GLUE

Please see our full-color ad on page 10.



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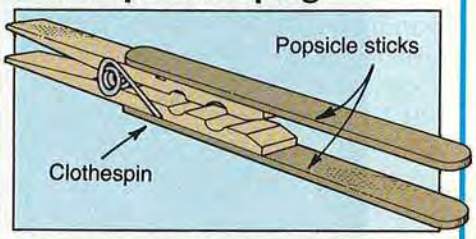
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 12

Extended jaws improve clothespin clamping



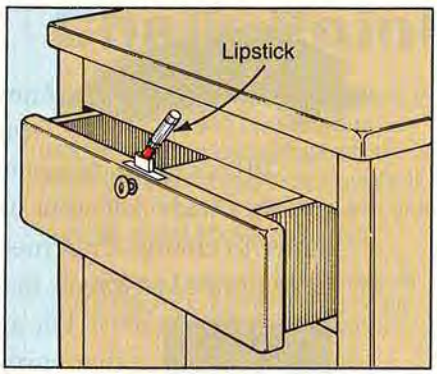
Spring-type clothespins make great clamps for small work. But they'd be even handier sometimes if the jaws opened wider for clamping thicker parts.

TIP: Extend the jaws by gluing scrapwood or Popsicle sticks to the clothespin where shown. Woodworker's (yellow) glue or epoxy will hold the lengthened jaws in place, but be sure to allow the glue to achieve full strength before putting the clothespin clamps into service.

—Joseph Loduca Sr., Fenton, Mo.

Put on lipstick to kiss lock misalignment goodbye

For your drawer lock to work properly, the lock bolt must slide smoothly into the mortise (or hole) you make for it. But, trying to measure and mark that location is driving you crazy.



TIP: Extend the lock bolt and put lipstick on the end of it. Retract the bolt, close the drawer, and then extend the bolt. The lipstick will mark the correct position for the bolt hole or mortise. You can mark door locks and cabinet latches this way, too.

—Cynthia Hewitt, Grants Pass, Ore.

Continued on page 16

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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 14

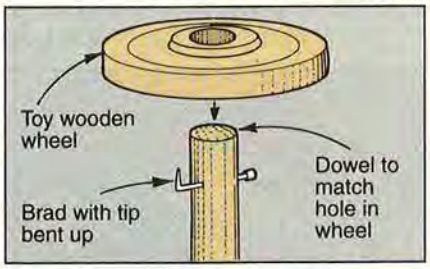
One-step wheel painting with dowel rod and coat hanger

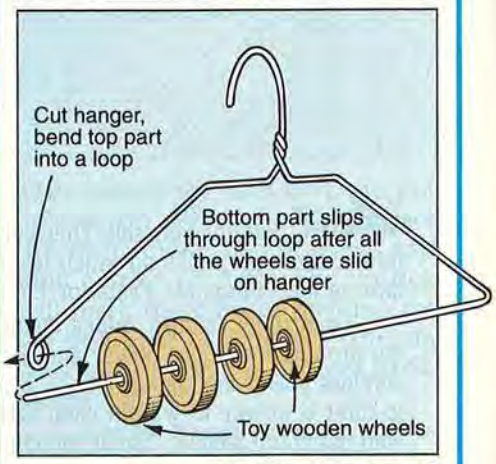
Painting one side of a small wooden wheel, waiting for it to dry, and then painting the other side takes a lot of time and often leaves you with overlapping paint streaks.

TIP: With this holder you can paint both sides of the wheel at the same time and dry the finished wheels on an old coat hanger. Start by driving a brad through a dowel rod that fits into the axle of the wheel. Bend the point of the brad up parallel with the length of the dowel.

Next cut one end of an old coat hanger and form a loop as shown at *below.* Paint one side of the wheel, then pick it up by inserting the dowel rod in the axle hole. With the wheel balanced on the brad, paint the other side and transfer the finished wheel to the coat hanger using the dowel rod. When you're done painting, insert the bottom of the coathanger in the loop so the wheels don't fall off. Then hang them up to dry.

—David Burr, Rockville, Md.




Cut hanger, bend top part into a loop
Bottom part slips through loop after all the wheels are slid on hanger
Toy wooden wheels

Continued on page 19

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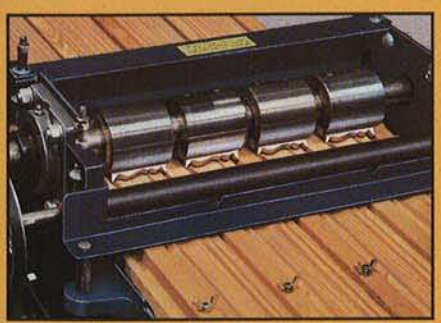

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Editor, Workbench Magazine

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E. D. Holtz, North Carolina

TIPS FROM YOUR SHOP (AND OURS)

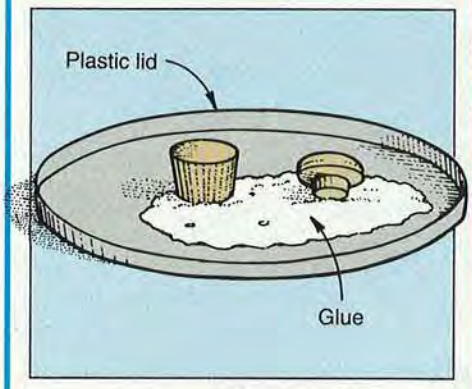
Continued from page 16

Pour a puddle of glue for easy plugging

Neatly applying woodworker's glue to plugs can be tricky. You just can't dribble a small stream out of the bottle.

TIP: Pour some glue onto a plastic jar lid or other suitable palette. Then, roll the bottom edge of the plug in the puddle of glue to apply an even coating right where you need it. Glue buttons, Shaker pegs, axle pegs, and other similar parts the same way.

—Glyn Roberts, Woodruff, Wis



A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Tired of grunting and groaning every time you have to move a big power tool? Take a look at the design for a mobile tablesaw base on *page 53*. You can apply this "wheelbarrow" design to many stationary power tools.
- Struggling with large, heavy sheets of plywood can strain your back and jeopardize your safety. To get a better handle on your sheet goods try our Roll Around Plywood Cart on *page 34* and our Sheet Goods Support Rack on *page 98*.
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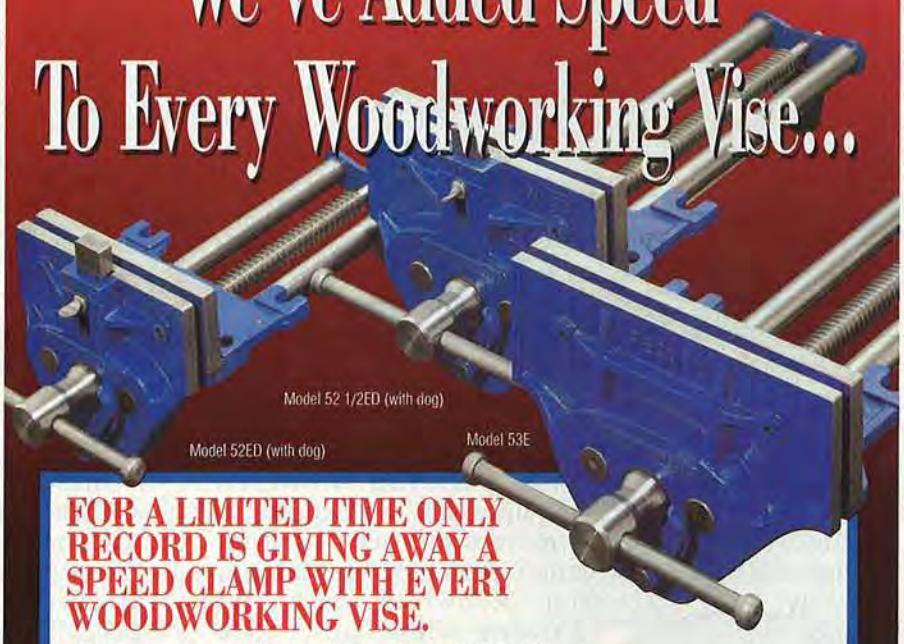

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ASK WOOD

Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside experts. Send your questions to Ask *WOOD®*, *Better Homes and Gardens® WOOD* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Glue up after staining

I prestain many of the parts I make so that I can store and transport them, and later assemble the parts at crafts fairs. Can you suggest an adhesive for joining these prestained workpieces?

—Doug Grimm, Riverside, Calif.

We don't know of such a glue, Doug. We contacted the glue experts at Franklin International, manufacturers of Titebond-brand adhesives, and they confirmed our suspicions that the stain will interfere with glue penetrating the surface of the wood. This results in a weaker bond at the glue joint.

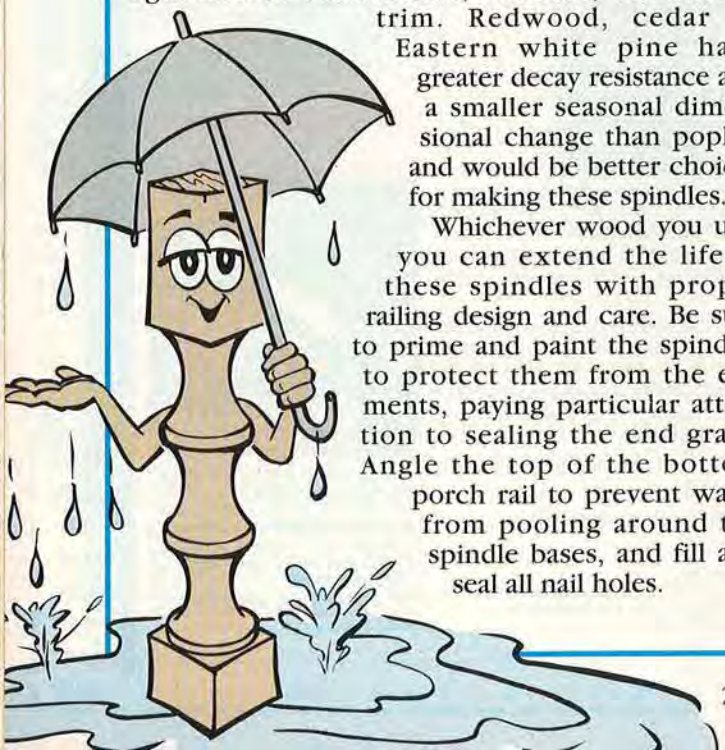
For a solution to your problem, we suggest that you mask the areas that will be glued. Remove the masking tape as soon as possible after staining the pieces to reduce the amount of tape-adhesive residue. This excess adhesive can be removed with lacquer thinner or acetone. The cleaner the joint surface (no stain, oil, finish, or other contaminant) the stronger the glue joint. Touch up any visible unstained areas after you assemble the project.

Poplar as an outdoor wood

We plan to replace a wrap-around porch on a Victorian home. I can buy readily available and reasonably priced 2"-thick poplar for making the many railing spindles. Is this a good wood to use for turning these spindles?

—Don Seymour, Beverly Hills, Fla.

Yellow poplar machines very nicely and provides an excellent surface for painting. However, this wood does not stand up well when exposed to the weather, and has more often been used for light interior construction, furniture, and interior trim. Redwood, cedar or Eastern white pine have greater decay resistance and a smaller seasonal dimensional change than poplar, and would be better choices for making these spindles.

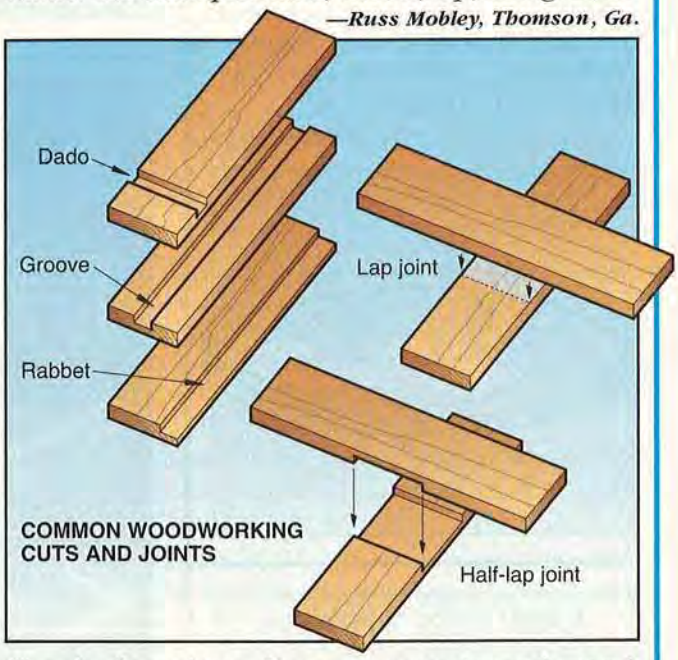


Whichever wood you use, you can extend the life of these spindles with proper railing design and care. Be sure to prime and paint the spindles to protect them from the elements, paying particular attention to sealing the end grain. Angle the top of the bottom porch rail to prevent water from pooling around the spindle bases, and fill and seal all nail holes.

More than just a name

Why are some of the saw cuts called by a different name? For example: dado, rabbet, lap, and groove?

—Russ Mobley, Thomson, Ga.



COMMON WOODWORKING CUTS AND JOINTS

Thanks for asking, Russ. As experienced woodworkers, we tend to take these terms for granted, but some explanation is in order from time to time. These terms describe specific wood cuts, and allow woodworkers to plan or communicate exactly how they will build a project. We define these terms as:

1) A *dado* consists of a flat-bottomed, U-shaped cut that runs across the grain of the wood. Use a dado to mount shelves in cabinets or bookcases.

2) A *groove* is also a flat-bottomed, U-shaped cut, but it runs in the same direction as the wood grain. Use a groove to hold panels in door frames.

2) The term *rabbet* describes a flat-bottomed L-shaped cut that runs along the edge or end of a board. Rabbets can run either across or with the grain. Use a rabbet to inset a back into the sides of a cabinet.

3) Make a *lap* joint by joining two boards so that the face grain of one board crosses the face grain of the other. Cutting a series of parallel dadoes on both pieces where they intersect makes a *half-lap* joint. Use a lap joint to make X-style picnic table legs. Use a half-lap joint to make an egg-crate style window frame.

Continued on page 22

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ASK WOOD

Continued from page 20

What can I do with these trees?

My husband and I are buying a farm with harvestable black walnut trees. We are interested in using some of this timber in a home we are building. How can we find commercial sawmills that will turn the logs into sawn lumber and veneers for use in paneling and furniture?

—Pamela Adams, Cincinnati

Contact the Department of Natural Resources of your state, Pam, and request a listing of sawmills. For a list of veneer mills, contact:

Hardwood Plywood Manufacturer's Assn.
1825 Michael Faraday Drive
P.O. Box 2789
Reston, VA 22090-2789
703/435-2900

Veneering wall panels is an advanced and difficult procedure. For a simpler and more-durable product, we recommend you have the paneling made from solid wood.

Looking for a clear finish

I have searched for years for a finish that will not alter the color of the wood in my projects. What can I use that will not darken and obscure the grain of the wood?

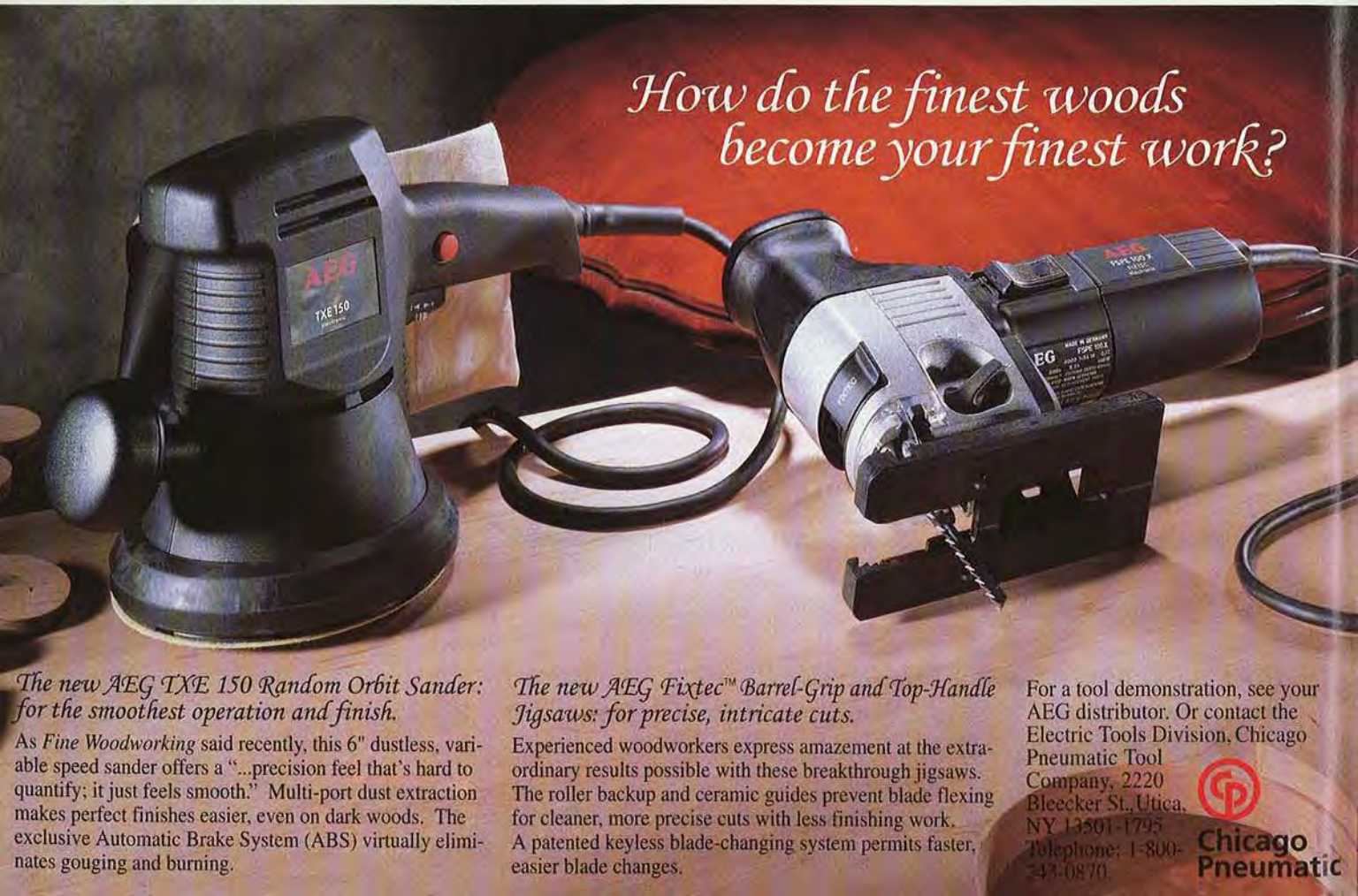
—Ivan Walker, Fort Wayne, Ind.

For an answer, Ivan, we contacted Jonathan Kemp of H. Behlen & Bro., a finish manufacturer. His response: "Our water-based finish is water clear because it doesn't have the solvents or resins that give an amber tint to the oil-based finishes.

"Water-based clear finishes dry quickly, with a two-hour recoat time. However, this finish falls between lacquer and polyurethane in the time it takes to reach full hardness or cure. To prevent marring the surface, wait 72 hours after applying the finish before you place anything on it.

"Water-based finishes contain only a fraction of the solvents found in oil-based finishes, and emit far less solvent odor while drying. Because these are water-based products, the initial coat of these finishes will raise the wood grain. Apply light coats and sand between applications to develop a smooth surface."

Continued on page 24



The new AEG TXE 150 Random Orbit Sander: for the smoothest operation and finish.

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For a tool demonstration, see your AEG distributor. Or contact the Electric Tools Division, Chicago Pneumatic Tool Company, 2220 Bleecker St., Utica, NY 13501-1795 Telephone: 1-800-243-0870.

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How I Turned My Hobby Into A Successful Craft Business.

When I first considered starting my own craft business, I knew I needed to work with the best materials to produce the type of unique crafts customers would pay top-dollar for.

Hawk Scroll Saws are perfect to begin or complement any workshop. It cuts wood, metal, glass, plastic, fabric and more. It will be the most versatile tool you'll ever own.

When time came to purchase a scroll saw, I knew I wanted the best. So I purchased an RBI Hawk Precision Scroll Saw.

With my RBI Hawk Precision Scroll Saw, I now produce the woodworking projects I have always dreamed of creating.

Edges Cut So Smooth They Require No Sanding.

Susan applying the final touches to one of her inspired creations.

Now, I create beautiful crafts and toys, tole painting cut-outs as well as intricate, detailed fretwork and inlays. I really love the fact that my RBI Hawk Precision Scroll Saw cuts edges so smooth it virtually eliminates the need for sanding. With my RBI Hawk, I create projects that my customers will treasure…year after year.

How I Increased My Business By Dimensioning Wood Myself.

Using her RBI 812 Woodplaner, Susan easily and quickly dimensions her patterns.

To produce wood to just the right dimensions for my patterns, my husband and I decided to buy an RBI 812 "3-in-1" Universal woodplaner system. It prepares wood to just the right thickness. Now, I even sell these pre-cut patterns to area craft stores and my own customers.

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Susan

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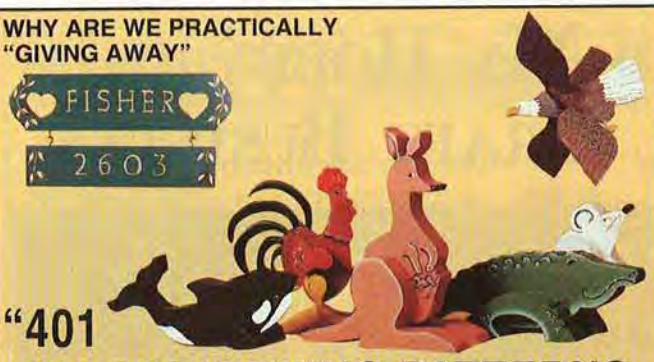

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(By Frank K. Wood)

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All orders mailed by October 15, 1994, will receive 50 special, seasonal, woodworking patterns as a free gift, guaranteed. Order right away!

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ASK WOOD

Continued from page 22

A jig for hinge alignment

I have been unable to find a jig that will align hinges on the door and frame of cabinets and boxes perfectly. Drilling screw holes accurately is also a problem. Can you help?

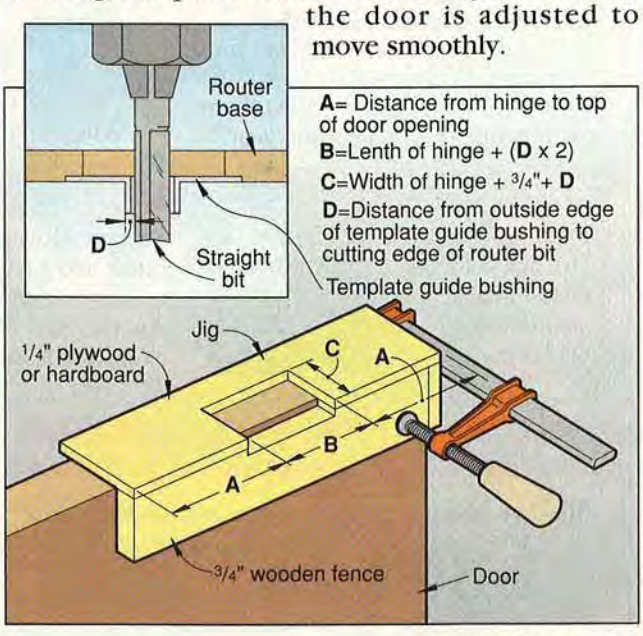
—Dan Leadbetter, Tacoma, Wash.

A hinge-mortising jig, such as the one shown *below*, will help you cut aligned hinge mortises, Dan. Place this jig on the cabinet sides or rails, with the appropriate end touching the top or bottom edge of the door. Clamp the jig in place, and use a router equipped with a template guide bushing in its base and a straight bit to cut the mortise. Square the corners with a chisel.

Next, set the door in the cabinet, shimming the door to allow even spacing top and bottom. Mark the top and bottom of the carcase hinge mortises on the door. Remove the door, and use the marks to align the hinge mortising jig. Rout the mortise.

We suggest you consider using a Vix bit to drill the screw holes. These bits are designed with a tapered centering collar that ensures the screw hole will be placed in the center of the countersunk screw opening in the hinge. The Vix bit for #5 and #6 screws (part # 434265), and the one for #8 - #10 screws (part # 43273) are priced at $8.45 each. The Vix bit for #2 - #4 screws (part # 43281) costs $8.95 (plus $4.95 handling per order). You can order these bits from: The Woodworker's Store, 21801 Industrial Blvd., Rogers, MN 55374-9514. Or, call 800/279-4441.

Mount the hinges in the mortises with one screw in each leaf, then check that the door operates smoothly before installing the other screws. Lock the hinges in place with the remaining screws after the door is adjusted to move smoothly.



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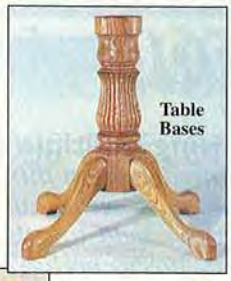

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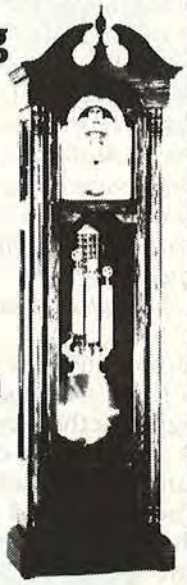

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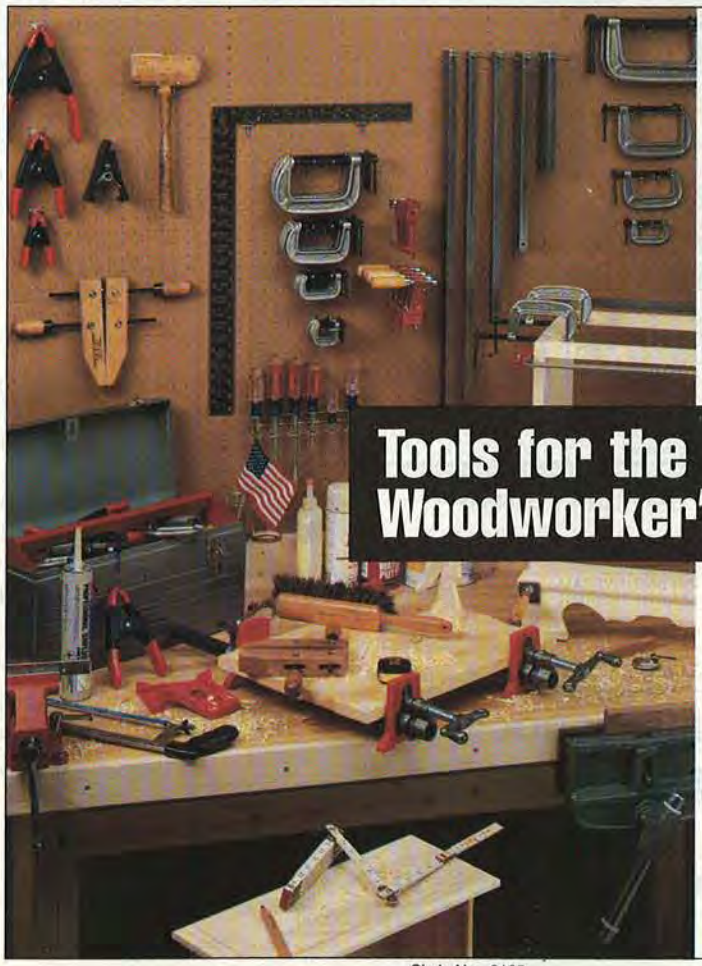

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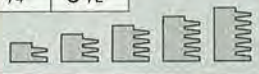

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ASK WOOD

Continued from page 24

Tip for scrollsawing multiple pieces

I build small boat models from thin (1/32 - 1/8" thick) basswood. When I try to scrollsaw several frames from basswood sheets held together with double-faced tape, the thin pieces break when I separate them. I've tried rubber cement to hold the layers together, but it tends to soak into the wood and causes problems with gluing and staining. Is there a better way to attach these layers of thin wood?

—William H. Smith, Cape Charles, Va.

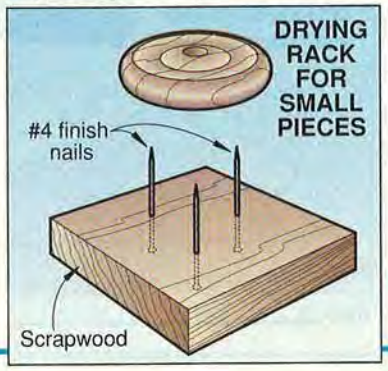
Bill, we asked Rick Hutcheson, our scrollsaw consultant, for an answer. Rick suggests you fasten the thin basswood together with nails or brads driven into the waste areas of the wood. Cut out the center sections of the frames first, leaving the material outside the boat frames fastened until the last cut. This way, when you're finished cutting, the frames are free from each other. Rick recommends using #18 or #19 brads to hold the sheets together. Drill pilot holes in solid woods to prevent the wood from splitting while driving these nails. Stack the layers on a steel surface, such as an anvil, and pound the nails completely through the stack, to peen the points of the nails.

Rack up the small pieces

I have a small woodcraft business, and I paint some of my products. Many times, I have to paint small pieces before assembling them. When I lay these pieces down on paper to dry, they often stick to the paper. Do you have an idea that would prevent this from happening?

—Joseph R. Levallee, Carrollton, Texas

Make a drying rack using a few finish nails and scrapwood. Drive three #4 finish nails through the scrap, close enough together so that they will support the painted wooden piece. Repeat this for each item you plan to paint. Set the craft piece on this rack, paint the edges and face, and allow to dry. Now, turn the piece over, paint the remaining face, and place the piece on the rack with the dry-face down. This will give you "paperless" painted pieces for your woodcrafts.



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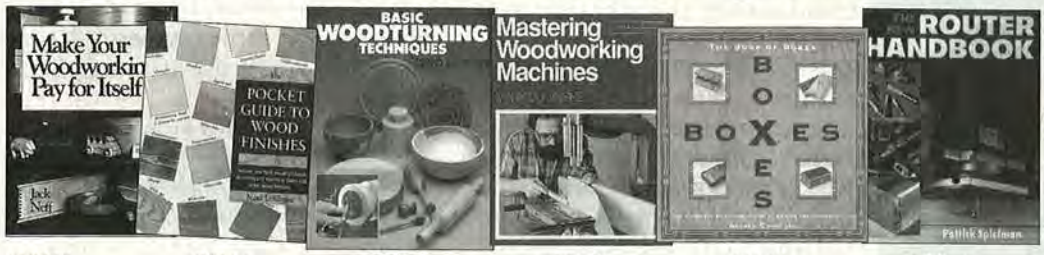

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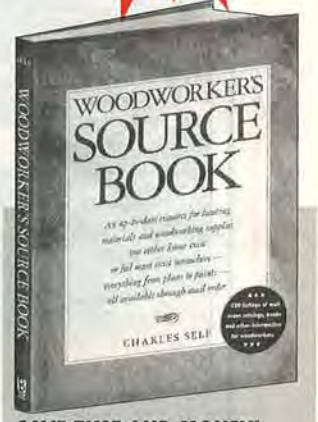

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Circle No. 1175 LAW7

This glue's no drip; it stains well and stands up to water

Traditional white or yellow woodworker's glue can drip and smear, refuse to take stains, and weaken when exposed to water. To solve all of these problems, Borden came up with a new formula called Weather-Tite Wood Glue.

The gel-like consistency of this glue prevents the inevitable squeeze-out from running down the face of your work. The excess glue beaded up neatly on the glue line, and that allowed me to focus on the work rather than on having to dash around for rags or wet cloths to mop up drips.

This new formula contains wood particles to help the dried glue absorb stains and finishes. On the boards I test-stained, the glue lines all but disappeared.

As to watertightness, I soaked a couple of my glue-ups for a day, and then tried to pry the boards apart. Despite my best efforts, the glue held fast. The water tightness makes this glue ideal for outdoor furniture projects that may get rained on, but I found the other benefits so handy that I plan to use it for all of my work.

—Tested by Bob McFarlin

Elmer's Weather-Tite Wood Glue, about $3 for an 8-oz bottle. Available at most hardware and home-center stores.

Pushstick performs seven different shop tasks

From the description on its package, this seven-function tool sounded like the Swiss Army knife of pushsticks. You can buy individual tools to perform each of these functions, but no one tool, until the Saw-Aid came along, combines them all.

I found the Saw-Aid most useful as a pushstick. The long front portion let me put pressure on the top of a board, eliminating the chatter you sometimes get with smaller pushsticks. The depth-gauge feature also came in handy. To accurately adjust the cutter height on your tablesaw or router table, simply crank the blade or bit up to the desired setting. The measurements step up in ⅛" increments from ⅛" to 1½".

The sides of this tool serve as angle gauges for 30°, 60°, 45°, and 90° readings. The angles are too short for marking off long cuts, but they work great for checking the tilt of a blade or the fit of a box corner.

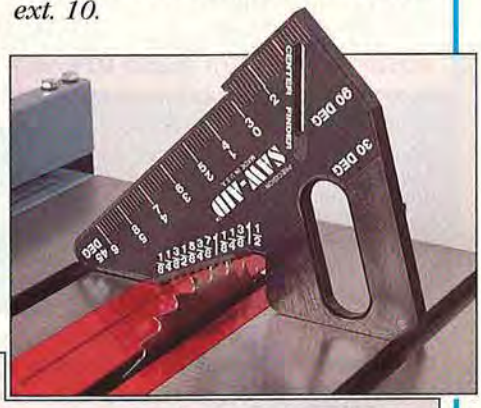
The center finder works fairly well too, but only takes stock up to 2¾" in diameter. My only complaint about this multi-purpose tool is that the thick white marks on the ruler left precise measuring a guess at best.

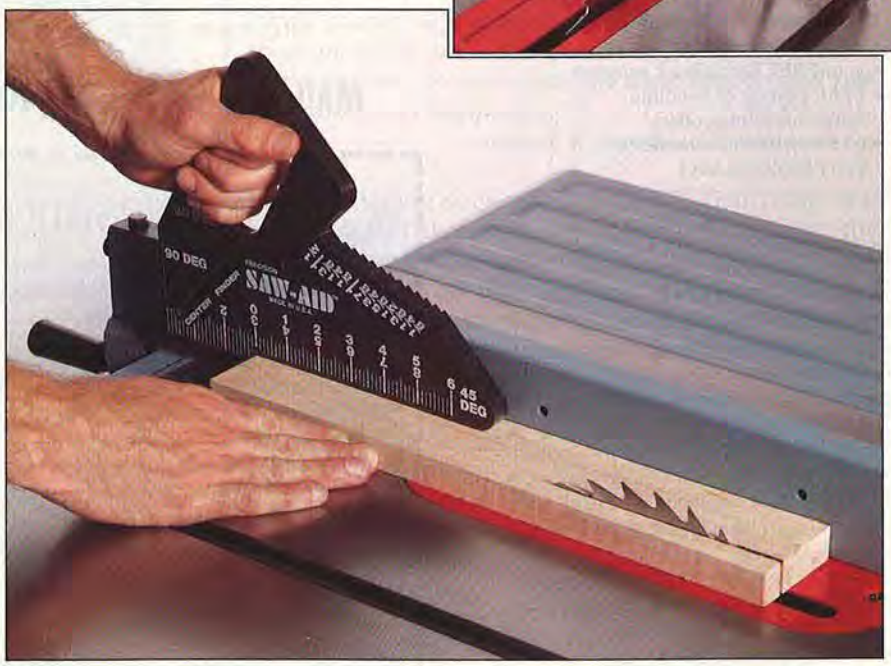
Despite appearances, the Saw-Aid is no toy. I found the accuracy of the depth gauge and all of the angles dead-on when I checked them against a machinist's square.

All in all, this tool offers enough practical applications to make it useful in any shop. Hang the Saw-Aid by your tablesaw or router table, and you'll use it more than you might think.

—Tested by Bob McFarlin

Saw-Aid, $14.95 ppd. Stots Corp., 10290 Shelbyville Rd., Louisville, KY 40223. Call 502/244-6047, ext. 10.





Continued on page 30

Here's What Our Customers Say!

(unsolicited)

Forrest-
You are the best!
Your blades are the best!
Your service is the best!
Your sharpening of my (cheap) dado set made it a new set.
It's a pleasure to do business with you – (I have told this to all of my friends, colleagues and family)

Herbert Needlman
Greenlawn, NY

Attention: Customer Relations Re: Woodworker I & II Blades

Gentlemen:

I recently ordered and received Woodworker I & II saw blades for my radial and table saws. I used the blades received.

I originally avoided your blades because of the cost in comparison with other models on the market. I saw some chips missing in my old blades, and it was time to toss and replace with new blades. I sighed and ate the additional cost and purchased your blades and stiffeners.

I find your blades of the highest quality. They produce a velvet cut with a polished finish which is not surpassed by any other manufacturer on the market. The wood passes through the saw like a hot knife through butter: smooth and with little effort. I see a similar glide whether it is maple, oak, pine, or whether it is thick or thin. Really fine stuff.

Your production staff can be proud of their work. The production quality is not just good, or to specification, it is exceptional.

In retrospect, the minor difference in cost is well worth the final result. Besides, it is the blade that produces the cut for a piece to outlast the maker.

Glad to make acquaintance with your staff and their work.

Respectfully yours,
David Hares, Esq.
Attorney, St. Louis, MO

(From Another Customer)

In closing I would like to add that the Woodworker II blade is by far the finest saw blade that I have ever used. I also have the Forrest dado set which is without a doubt, the king of all dado sets. I work exclusively with red oak and oak veneer plywood and the dado set performs splinter free cuts as advertised.

It is a pleasure to purchase a product that does what it is advertised to do. Thanks for making such a fine product.

Sincerely,
Dennis R. Schule
Owatonna, MN

"NO GEN. PURPOSE BLADE PRODUCED BETTER RESULTS than the FORREST 40 tooth Woodworker II." ***Jim Forrest***

Install and leave it for plys & woods to 1½". W. Krier.

Outperformed 36 other PREMIUM blades in WOOD Mag. test P. 45, Sept. 93.

★ ★ ★ ★ ★ ★ ★

SAVE $45

★ ★ ★ ★ ★ ★ ★

Get 9 - $5 sharpening discount coupons on **FORREST** or **other make** carbide blades or dados if ordering before Sept. 30, 1994. Must mention WOOD for coupons & EXTRA BONUS.

WOODWORKER II

TABLE-SLIDE & CHOP -MITERS (gen. prps.) & small PORTABLES (Skil, etc.)

Things you asked us for:

With this ONE ALL PURPOSE blade (40 Teeth) you can SMOOTH RIP & CROSSCUT 1"-2" ROCKHARDS and SOFTWOODS with **smooth-as-sanded surface.** PLY-VENEERS (oak/birch) crosscut with NO BOTTOM SPLINTER.

- Mostly 1/8 kerf 15°, ATB and 20° face hook (easyfeed).
- DOUBLE HARDER and 40% STRONGER CARBIDE.
- Ends **blade changing** (does rip, combo and crosscut).
- Ends **scratchy saw cuts** (for the rest of your life).
- Ends **second step finishing** (jointing or sanding).
- Ends **cutting 1/16" oversize** to allow for RESURFACING.
- Buy and **sharpen ONE** blade instead of 3 (24T rip, 50T Combination, 80T Crosscut).
- *Strongly* recommend our *.001* flat **large stiffener-dampener** against out side of blade for smoothest, **QUIETEST CUTS** by this and any other blade.
- Use 30T if ripping mostly 2" - 3" hardwoods.
- Side wobble held *.001* - others .004/.010 is common! RAISE for THICK woods, LOWER for THIN woods and *perfect cut everything!* All 5/8" holes, unless otherwise noted.

	List	SALE		List	SALE
14" x 40T x 1" BORE	$215	$149	9" x 40T	$146	$109
14" x 30T x 1" "	195	139	30T	125	99
12" x 40T x 1" "	183	129	*8-1/4" x 40T 3/32	136	99
12" x 30T x 1" "	162	119	8" x 40T 3/32	136	99
10" x 40T 1/8 & 3/32	156	119	30T 3/32	115	89
30T 1/8 & 3/32	135	99	7-1/4" x 30T 3/32	112	69
			New 6" x 40T 3/32 Saw Boss	139	89

5/8" holes std. Boring up to 1-1/4" $7.50 extra - Shipping $4.50

*NEW For Sears & Makita Table Saws

QUIET! Also help all your other blades to cut better.
Use our 1/8" DAMPENER STIFFENERS, against one side

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Tryable and RETURNABLE. CUTS NOISE to 1/2 or 1/4. Stops vibration, flutter, cutting noise and blade ring. Parallel and flat to .001 • 7" and larger available.

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WE RECOMMEND OUR FACTORY SHARPENING as some local sharpening creates problems with **Micro-chipped edges** reducing blade life & cutting quality. 2-4 DAYS ON THESE AND ALL MAKES OF FLAT FACE & CONCAVE CARBIDE TIP SAWS. SHIP VIA UPS. Typical 10 x 40T $15.00, 60T $17.75. Add return UPS $4.50 or 2nd Day Air $8.

SATISFACTION GUARANTEED OR FULL CASH REFUND.
47 years of fine American saw making & sharpening.

WOODWORKER I - For TABLE and RADIAL SAW

this trim and crosscut ALL PURPOSE blade gives scratch free POLISHED cuts on all materials RIP or CROSSCUT up to 2".

- All 60T and 3/32" *THIN* kerf 30° ATB and 5° face hook on 10" dia and under. 12" and 14" are 20° ATB 1/8" K.
- DOUBLE HARDER and 40% STRONGER carbide.
- THIN KERF:

Saves 1/3 wood loss on each cut, radial or table. Feeds easy when used for moderate rip and crosscut on table saw. **Reduces "JUMP IN"** greatly for better "PULL CONTROL". Practically **eliminates bottom splinter** on RADIAL-CROSS CUT.

- Totally stops ALL bottom and top splinter on ply veneers in push-cut mode on RADIAL.
- Our STIFFENER STRONGLY RECOMMENDED AGAINST outside of blade only for best cuts.

Made and serviced in USA for your benefit.

	List	SALE
14" x 60T x 1" 1/8"	$224	$159
12" x 60T x 1" or 5/8" 1/8" K	198	139
10" x 60T x 5/8" 3/32" K	162	129
9" x 60T x 5/8" 3/32" K	156	119
8" x 60T x 5/8" 3/32" K	150	109
New 8-1/4" x 60T x 5/8" 3/32" K	150	109

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OUT PERFORMS 29 + 32 OTHER DADO SETS-WOOD Mag., Oct. 91, pg. 62,63 "Best Value"

Boring up to 1-1/4" $25 per set **SALE! 10% OFF $5.50 Per Set Shipping** **NEW 3/32 Chipper & Shims incl.**

"No tearout on all five woods tested." -*Fine Woodworking July/Aug, 1991*

8 - 5/8" Bore List $321/**SALE $289** • 10 - 5/8" & 1" Bore List $389/**SALE $349**

DURALINE Hi-AT For TABLE & RADIAL SAW

(very good on chop saw too!) STOP SPLINTERING those SPLINTERY OAKS, HARDWOOD VENEERS and *thin* 2 SIDE LAMINATES ON PARTICLE BOARD.
FOR FASTER FEED RATES AND MORE ABSOLUTE SPLINTER CONTROL.

NEW PRICES EFFECTIVE SEPT. 1, 1993

DURALINE Hi-AT

Note: *Fine Woodworking Editorial Nov./Dec. 1988 No. 73, pg. 65, S.N. recommends high alternating top bevel (ATB) thin kerfs and large blade stiffeners for smoothest cuts on RADIAL SAW, etc.*

Jim Forrest, President and designer microscoping cutting edge.

All 5/8" holes. Boring up to 1-1/4" $7.50 extra
Larger holes - time basis. Shipping $4.50

	LIST	SALE
7-1/4" x 60T 3/32"	$149	$129
8" x 80T 1/8" & 3/32"	202	$169
9" x 80T 1/8" & 3/32"	207	$179
10" x 80T 1/8" & 3/32"	207	$159
SPECIAL SALE10" ONLY $159		
12" x 80T x 1" 1/8"	212	$181
12" x 100T x 1" 1/8"	253	$215
14" x 80T x 1"	232	$197
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16" x 80T x 1"	262	$223
16" x 100T x 1"	294	$243

CARBIDE IS THE HARDEST OF THE C-4 GRADES AND 40% STRONGER, NOT WEAKER!! For 50% to 300% longer life!

CHOPMASTER for SLIDING COMPOUNDS & *MITER SAWS*
New specs, 5° Neg. Pts. & flat, dial .001/.002 for perfect, tight, smooth, splinter-free miter joints
NEW AVAILABLE SIZES

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Delta Sidekick 6-1/2"	6-1/2" x	40T x 5/8"	$149	$ 89
Sears 8-1/4" & Delta	8-1/4" x	60T x 5/8"	170	99
Hitachi 8-1/2" DeWalt 8-1/2" & Ryobi	8-1/2" x	60T x 5/8"	179	109
Delta	9" x	80T x 5/8"	204	119
Ryobi-Makita & all	10" x	80T x 5/8"	207	129
Hitachi & B&D & DeWalt	12" x	80T x 1"	229	139
Ryobi-Makita	14" x	100T x 1"	266	179
Hitachi	15" x	100T x 1"	277	189

For good gen. prps. cuts use Woodworker II 30T & 40T or Woodworker I

Use small stiffener where possible

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Circle No. 1322

Continued from page 28

Turn on your dust collector by remote control

Turning your dust collector on and off requires that you spend a lot of time hiking to and from the machine. That, or you can spend several hours hard-wiring low-voltage switches in your shop.

Now, there's a third way—the DCS-100 wireless dust-collection switching system. To use it, plug the relay module (the beige box) into an outlet, and plug your dust collector into the module. Then, plug the transceiver module (the white box) into any centrally-located electrical outlet in your shop and put the antenna up. Pop an AA battery into the hand-held radio-frequency transmitter, hit the button, and bingo!

For the purpose of my testing, I kept the transmitter in my pocket and pulled it out and clicked the dust collector on and off while working with various power tools. It worked no matter where I stood or how accurately I aimed it. Eliminating that hike to the dust collector saved a lot of time and ended a distracting hassle. The only drawback I could think of is that the transmitter might get lost in the clutter on your benchtop—a problem you can easily solve by storing it in a safe, easy-to-find location.

—Tested by Chuck Hedlund

DCS-100 Starter Kit, (including transceiver module, relay module, and hand-held RF transmitter) $92 ppd. (North Carolina residents add 6% sales tax), from Fernbrook, 83 Pine Rd., Otto, NC 28763. Call 704/524-6125.

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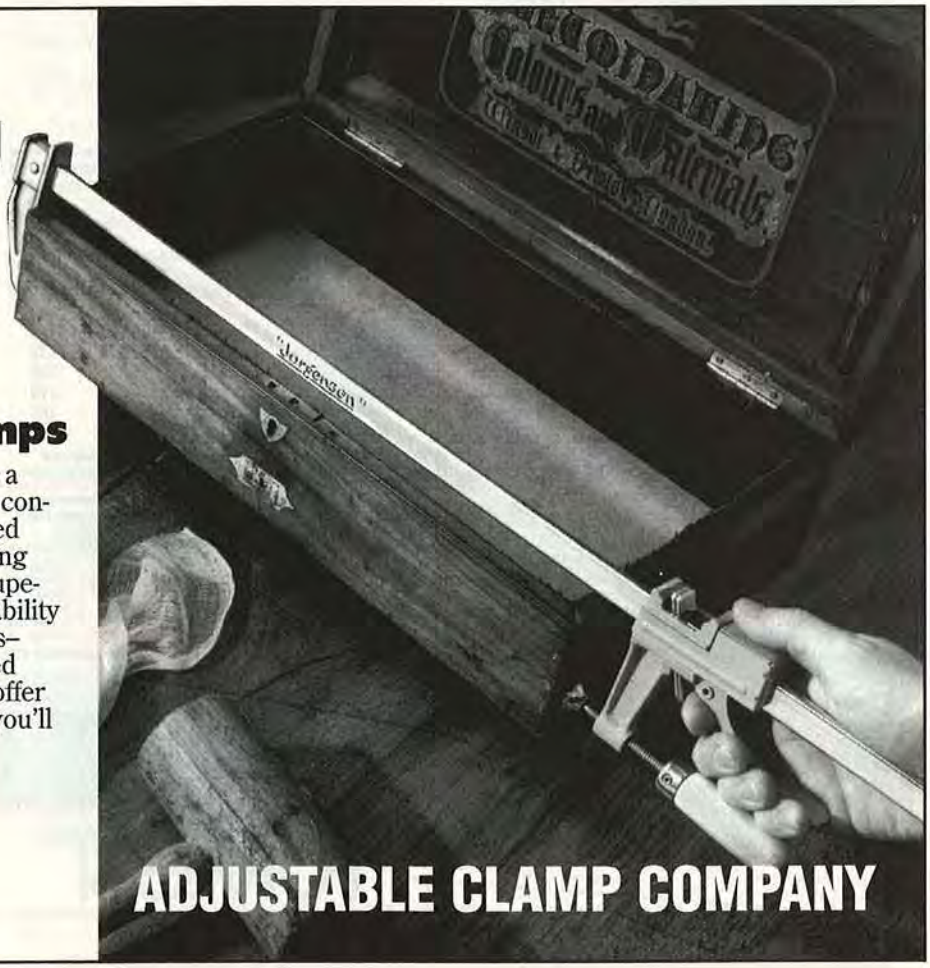

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August West will show you how to clean and maintain chimneys and flues using our state-of-the-art equipment and field proven techniques.

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For more than eighteen years, August West has equipped men and women to clean and service chimneys and flues.

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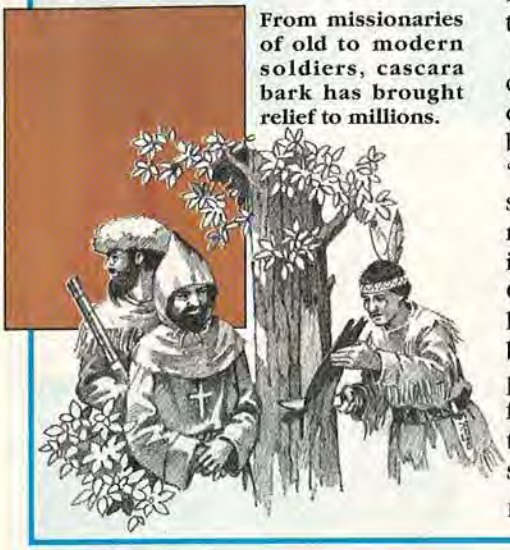
From missionaries of old to modern soldiers, cascara bark has brought relief to millions.



Growing as a small deciduous tree in the big-timber regions of the Pacific Northwest, the cascara buckthorn (*Rhamnus purshiana)* contains a medicinal extract in its bark that's a sure cure for one of mankind's most common maladies. For over 100 years, cascara buckthorn has brought relief to those suffering from constipation.

Although at 10' to 40' tall it's dwarfed by Douglas fir and other commercial species, the cascara buckthorn draws a small army of "cascara barkers" deep into the shady woods every summer. Using nothing more than a sharp knife, itinerant workers from Northern California to British Columbia collect about one million pounds of bark. A typical barker harvests 250 pounds in a day and collects $50 for the effort. When in doubt about the species, barkers simply taste a small sample of the bark for the bitter flavor and mouth-numbing effect that marks it as cascara.

Local Indians first alerted the area's Spanish missionaries to the beneficial effects of this bitter bark, which was thereafter dubbed cascara *sagrada* or "holy bark." Yet, it wasn't until 1878 that the Parke-Davis company began selling cascara extract to the rest of the country in an over-the-counter formula. By World War II, GIs weary and bloated with C-rations called cascara-based medicine "CC pills."

Cascara wood varies from yellow to orange-brown in color. Although easy to machine and finish, it has little commercial value.

Today, newer formulas have eroded cascara's once-dominant medicinal position. But if you read the labels in the pharmacy, you'll still occasionally see the holy bark—one of nature's safest, most effective laxatives—as an ingredient.

Illustration: Jim Stevenson

if you can plug it in...we've got it!
ROCK BOTTOM PRICES ON ALL YOUR FAVORITE TOOLS

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362 4x24 BeltSander w/bag 199
363 4x24 BeltSander 191
410 Underscribe Router 148
605 1/2 Sheet Sander 116
556 Biscuit Joiner w/adj fence 172
690 1 1/2 Hp Router 133
9690 Router with Case 144
691 1 1/2 Hp D-handle Router 148
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695 Router Table&Motor 216
696 Router TableOnly 128
1700 Heat Gun 66
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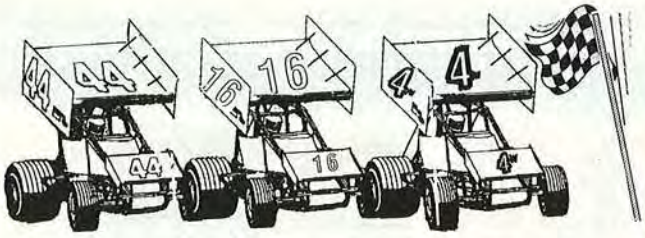

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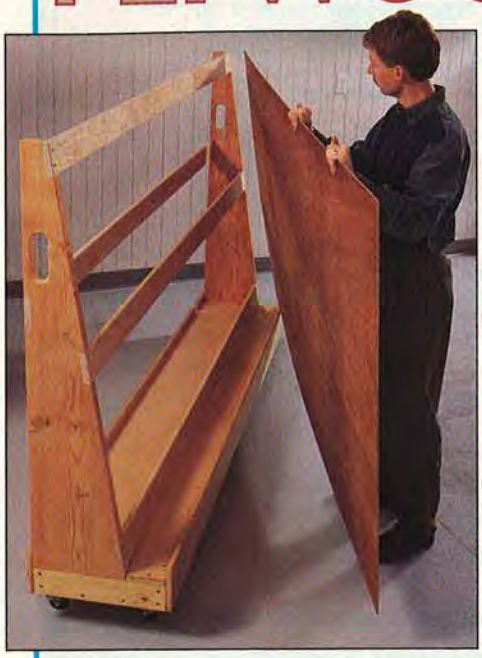
ROLL-AROUND PLYWOOD CART

WOOD magazine's IDEA SHOP 2

LET THE WHEELS DO THE WORK



Carrying plywood any distance can quickly turn into a wrestling match, but you'll win hands down when you use this mobile storage rack. And building it won't bust your budget either. All you need is plywood, dimensional lumber, casters, and wood screws.

Swiveling casters allow you to turn the cart in any direction and back it up to a wall for space-saving storage. Full 4×8 sheets fit on the front of the rack. Inside the slats, you can store cut-off pieces.

The construction sequence is as follows: Cut out the two end panels (A) and attach them to the end supports (B). Assemble the base (C, D, E, F,) and attach the end panels to that. Complete the rack by attaching the rails (G).

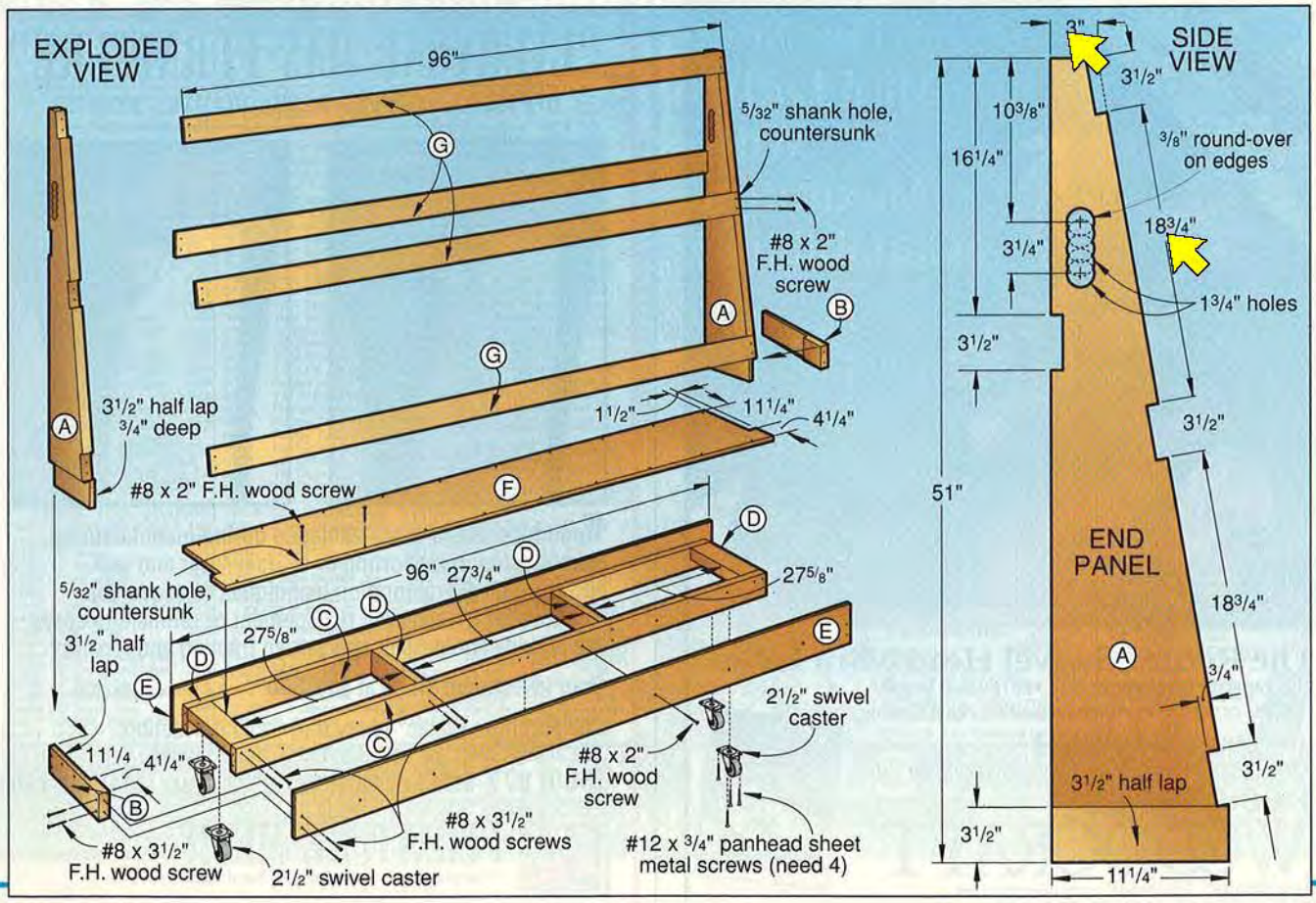
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A end panels	1½"	11¼"	51"	2x12	2
B end supports	1½"	3½"	15½"	2x4	2
C base	1½"	3½"	93"	2x4	2
D base	1½"	3½"	12½"	2x4	4
E base	¾"	5½"	96"	1x6	2
F base	¾"	15½"	96"	P	1
G rails	¾"	3½"	96"	1x4	4

Materials Key: P–plywood

Supplies: #8x2", #8x3½" wood screws. 2½" swivel casters, #12x¾" panhead sheet-metal screws.

Project Design: James R. Downing
Photograph: Bill Hopkins, Jr.
Illustrations: Roxanne LeMoine



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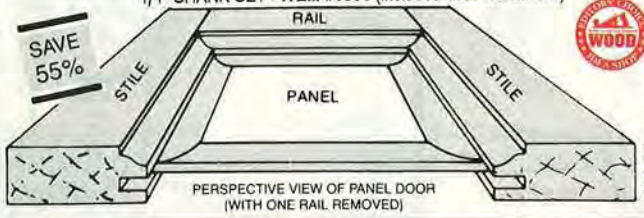
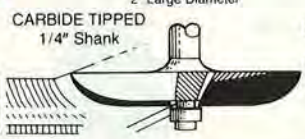


PERSPECTIVE VIEW OF PANEL DOOR (WITH ONE RAIL REMOVED)

RAISED PANEL BIT SUPPLIED WITH BALL BEARING



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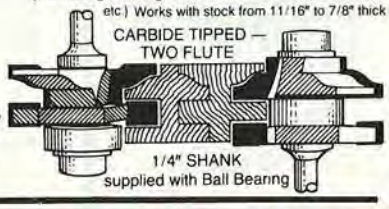

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#1307	CLASSICAL - 1/4" Radius — 3/4" Cutting Length	1/4"	$25.00
#1308	CLASSICAL - 3/16" Radius — 5/8" Cutting Length	1/2"	$22.50
#1309	45° CHAMFER - 3/8" Cutting Length	1/4"	$13.00
#1310	45° CHAMFER - 5/8" Cutting Length NEW !	1/4"	$15.00
#1311	45° CHAMFER - 5/8" Cutting Length	1/2"	$17.00
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#1315	ROUND OVER - 3/16" Radius	1/4"	$11.00
#1316	ROUND OVER - 5/16" Radius	1/4"	$14.00
#1317	ROUND OVER - 1/4" Radius NEW !	1/2"	$12.00
#1318	ROUND OVER - 3/8" Radius	1/2"	$15.50
#1319	ROUND OVER - 1/2" Radius	1/2"	$17.00
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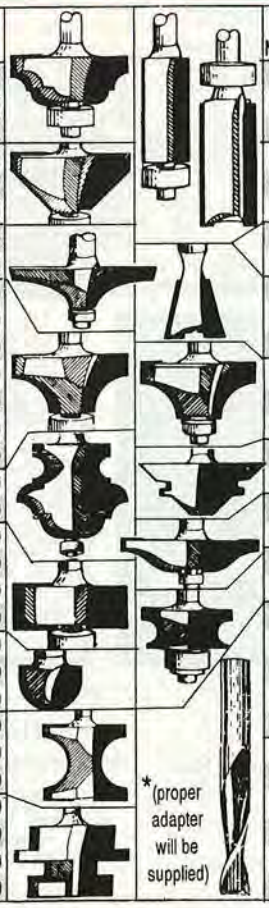

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#1337	FLUSH TRIM - 3/8" Diameter — 1" Cutting Length	1/4"	$ 7.50
#1338	FLUSH TRIM - 1/2" Diameter — 1" Cutting Length	1/4"	$ 8.00
#1339	FLUSH TRIM - 1/2" Diameter — 1-3/16" Cut.Length	1/2"	$ 8.00
#1340	PATTERN / FLUSH TRIM - 1" Cutting Length	1/4"	$15.00
#1341	PATTERN / FLUSH TRIM - 1" Cut. Length NEW !	1/4"	$17.00
#1342	PATTERN / FLUSH TRIM - 1" Cutting Length	1/2"	$19.00
#1343	KEYHOLE CUTTER - 3/8" (bit not	1/4"	$ 8.50
#1344	KEYHOLE CUTTER - 1/2" shown)	1/4"	$ 9.00
#1345	DOVETAIL (HSS) - 1/4" Diameter — 7-1/2°	1/4"	$ 6.50
#1346	DOVETAIL - 1/2" Diameter — 14° NEW !	1/4"	$ 6.00
#1347	DOVETAIL - 1/2" Diameter — 14°	1/2"	$ 6.50
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#1349	BEADING - 3/8" Radius	1/4"	$15.50
#1350	BEADING - 1/2" Radius	1/4"	$17.00
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#1354	OGEE RAISED PANEL - 2-3/4" Large Diameter	1/2"	$32.95
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#1357	SPIRAL UPCUT - 1/8" Diameter (solid carbide)	1/4"*	$ 9.00
#1358	SPIRAL UPCUT - 1/4" Diameter (solid carbide)	1/4"	$12.00
#1359	SPIRAL UPCUT - 1/4" Diameter (solid carbide)	1/2"*	$12.00
#1360	SPIRAL UPCUT - 3/8" Diameter (solid carbide)	1/2"*	$24.00
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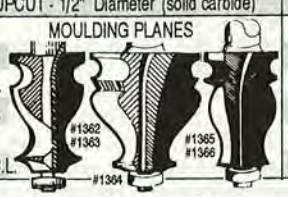
#1366	1-11/16" C.L.	1/2"	$31.95



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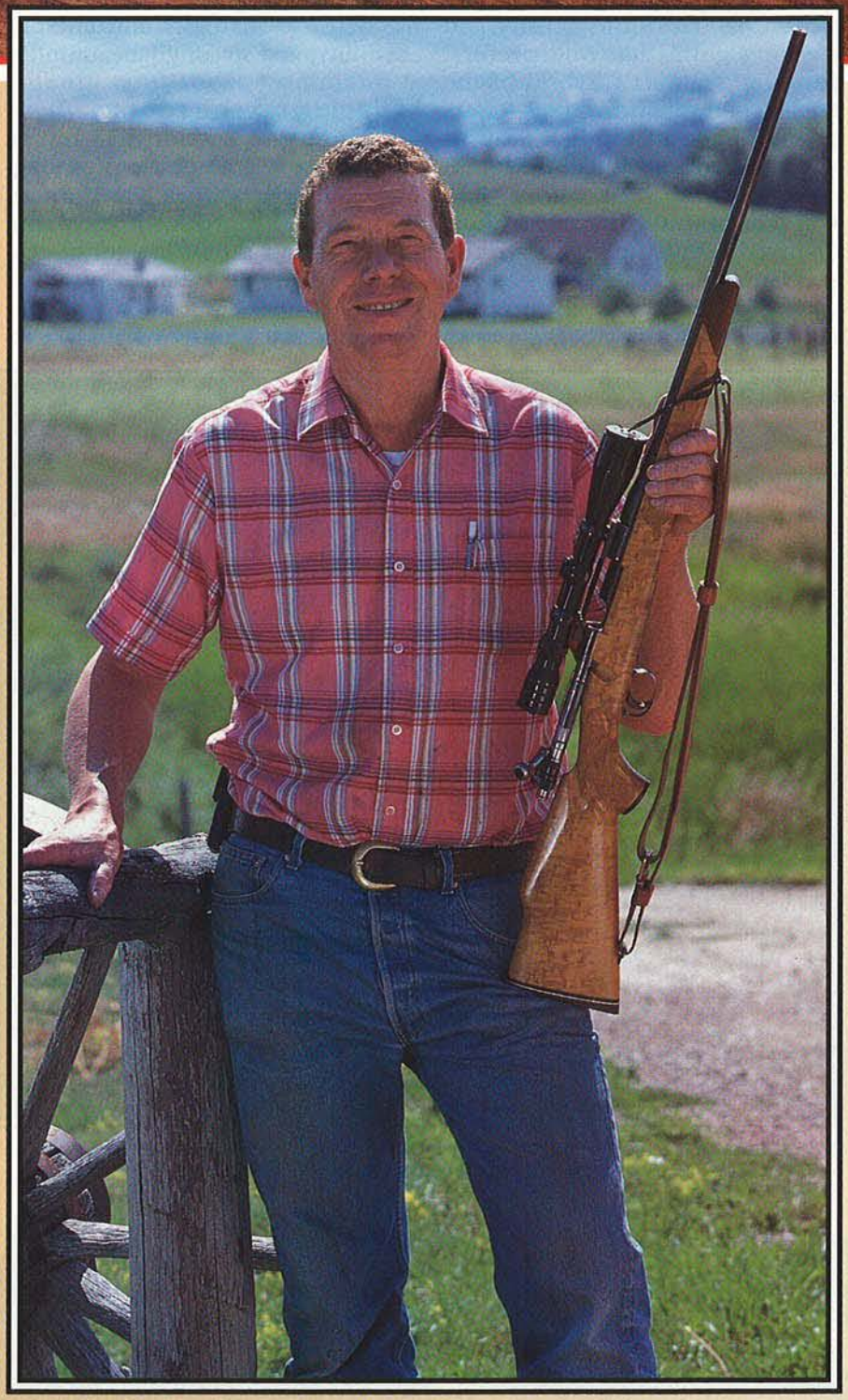

With the Bighorn Mountains in the distance, Bud Morrow shows off the first gun he ever built, a .270 Winchester with a converted Mauser action.

At the foot of the Bighorn Mountains near the town of Sheridan, Wyoming, Bud Morrow builds custom guns for a living. In his crowded shop, the trophy heads of elk, deer, and Bighorn sheep look down on a jumble of files, chisels, bullet boxes, barrels, trigger assemblies, and rifle-stock blanks. Standing at a bench that has been seasoned with decades of iron filings and tung oil, Bud carefully and patiently builds anywhere from 30 to 50 new rifles a year. He also reconditions older rifles like pre-1964 Winchester Model 70s, and old military rifles. As a graduate of the country's oldest gunsmithing school at Trinidad State Junior College in Colorado, and after 35 years of building custom hunting rifles, Bud can rightfully stake his claim as one of the top gunsmiths in the country.

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The Bighorn Mountains own a big chunk of American history. General George Custer met his fate just an hour's drive north from here. An hour to the south you'll find the site of the Hole in the Wall, made famous by Butch Cassidy and the Sundance Kid.

A century after that wild and violent era, the guns are no longer shouldered by soldiers and outlaws, but by big-game hunters. To them the mountains of Wyoming are Mecca. And some of them, those who have the money and the passion for guns and hunting, come to the Sheridan Gun Shop to have Bud Morrow build them a one-of-kind rifle.

Continued

Print this article

If it's too pretty to use, I say "don't buy it."

With a starting price around $3,000, custom rifles don't come cheap, but Bud would much rather his customers use his rifles than to seal them up for show in a display cabinet.

"I build these guns for people to hunt with," says Bud. "Just because something's pretty doesn't mean it can't serve a purpose. If somebody says it's too pretty to use, I say don't buy it."

So why then would a person pay thousands of dollars for a custom gun and then risk damaging it in the wilderness? " It's a luxury for sure," says Bud, "but it's like the difference between a Cadillac and a Chevrolet. Both will get you down the road, but one feels a whole lot better than the other."

Stalking the perfect stock

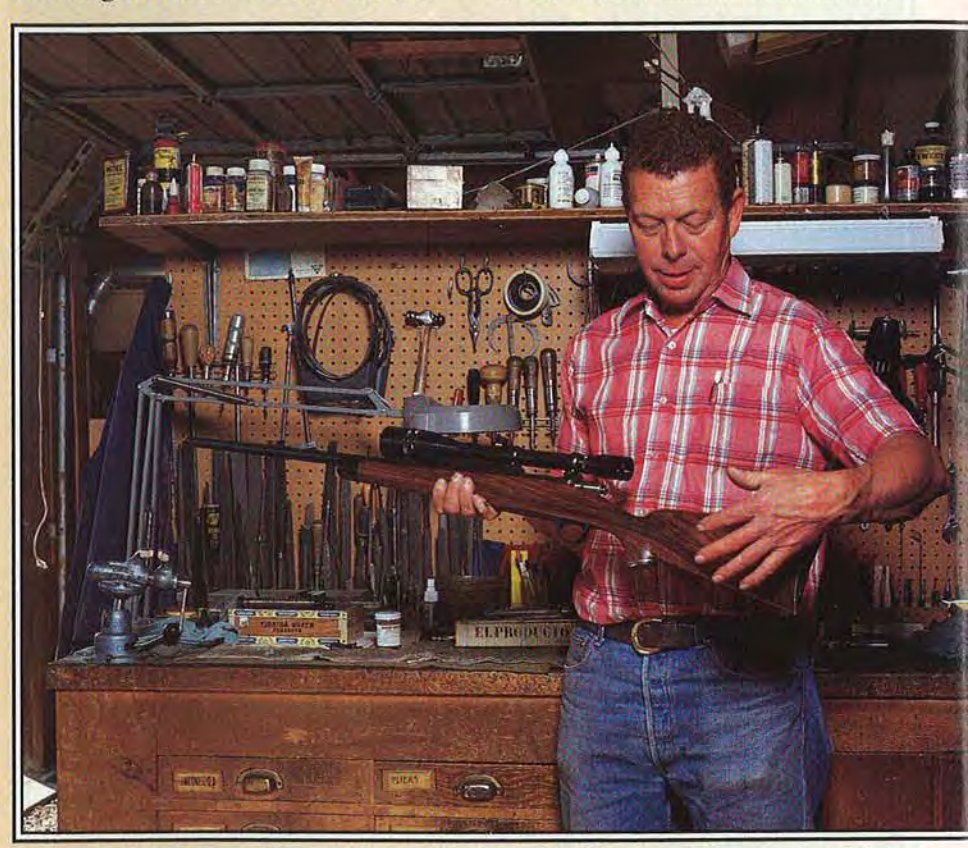
The process of fitting the gun to the buyer begins with the selection of wood. Leaning back against his workbench, Bud is talking about trees and the growing conditions that make good gunstocks. "Trees are a lot like people. They want to go through life without too much adversity. But the best wood comes from trees that have to overcome hardships—poor soil, tough climates, and strong winds. These conditions force a tree to grow slower, but that makes the wood better, denser, and more durable."

English walnut *(Juglans regia)*, a strong, dense wood with fine pores, takes the top spot on most gunmaker's lists. (It's sometimes called French walnut because most of it is grown in and exported from France). American black walnut *(Juglans nigra)*, much of which lives a pampered life on tree farms, lacks the density and swirling grain that Bud prefers. Bastogne walnut, a hybrid of the English and American trees, offers the strength of English walnut with a beautiful fiddleback grain pattern. On rare occasions, Bud will build a gun from maple, koa, or myrtle, but these are strictly special requests.

Bud's favorite wood, however, is the English walnut harvested in the rugged, arid regions of Turkey and the Himalayan mountains. The wood from these slow-growing trees is a gunmaker's dream—as dense as marble, unmatched in stability, and strikingly beautiful.

Digging up the roots

Finding good wood has never been easy. "Most of the pretty figure and grain comes into the tree close to the ground," explains Bud. To cut a tree for gunstocks, the tree should be dug up out of the ground to get the roots. "Some cutters know what makes a



In his shop, Bud explains the ideas behind the clean lines and conservative design of a classically styled, 22-250 rifle he recently built.

Rifle stock blanks

good gunstock. The ones who don't, break my heart," says Bud, referring to the wood he's seen ruined by careless sawing. Out of 100 stock blanks, only two or three usually meet his requirements, and these command a hefty price, anywhere from $500 to $1,500. Bud buys most of his stocks from tree cutters, people who drive around the country peddling these premium pieces of wood to gunsmiths.

Once he has a stock blank in hand, Bud sets it aside to air-dry for three to five years. After the stock has seasoned, he'll take a few measurements to fit the gun to the customer, and discuss style preferences and other details. The basic proportions of most rifles are well established, but Bud may vary the length of the stock up to an inch or so to suit the size and shooting requirements of the customer.

The return of classic style

Gunmaking traditions offer two styles—the classic school and the California school. Bud pitched his tent in the classic camp long ago. His guns have always cut a clean, conservative profile. The California school, with its embellished curves and diamond inlays ("gingerbread" according to Bud) flowered in the 1960s and '70s at the behest of its guru and champion Roy Weatherby. But like so many other trends, the classic school is back in favor.

Putting it all together

Once he's selected the wood, Bud will square the top of the stock and one side, and then rough out the shape on a bandsaw. The recesses for the metal parts are hogged out with a drill press or router and cleaned up with chisels and gouges.

Beyond the rough shape, however, carving a custom gunstock is pure sculpture carried out with rasps, files, chisels, drawknives, and spokeshaves. Plans and patterns don't exist. And Bud has enough of an artist's temperament to know not to force himself to shape a stock on a bad day. "I can't shape or sand if I'm not feeling right about it", says Bud. "I'll go camping or go out in the garden instead. It's a whole lot less expensive to chop down a few bean plants than it is to ruin a thousand-dollar piece of wood."

Where metal meets wood

The biggest woodworking challenge comes when it's time to marry the wood to the metal parts. Any looseness here will eventually destroy the stock as the explosive force of the bullets slam the metal back against the wood. The barrel, bolt action, trigger assembly, and magazine box must fit to tolerances that

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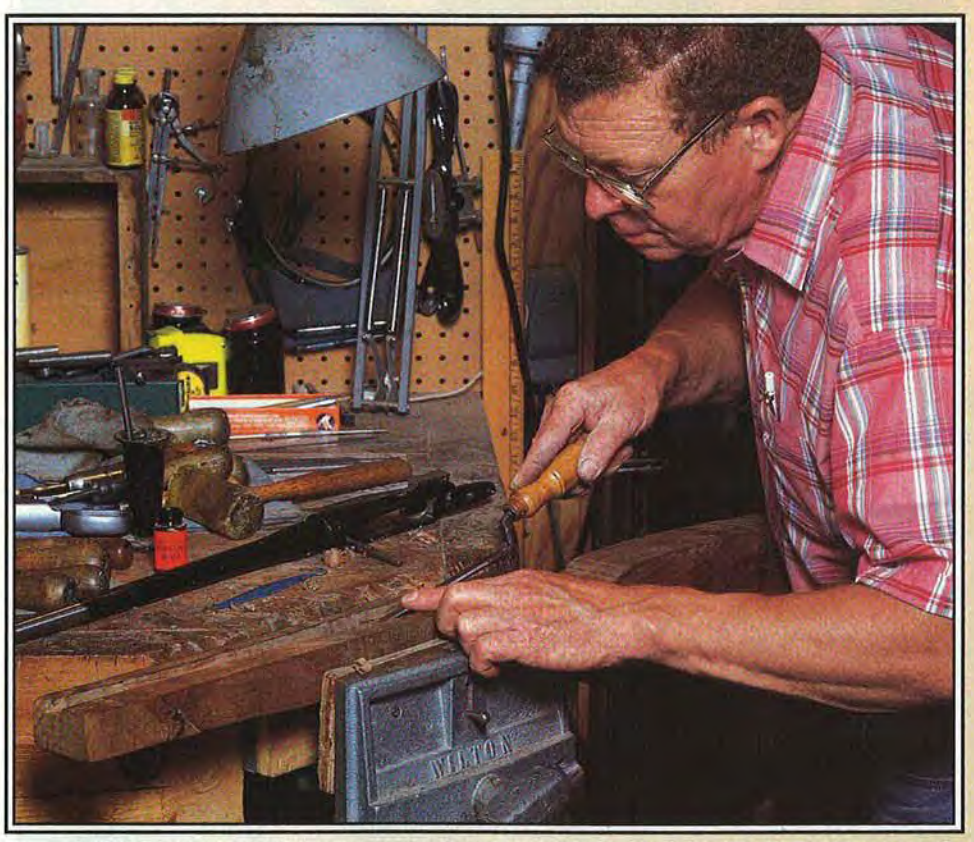
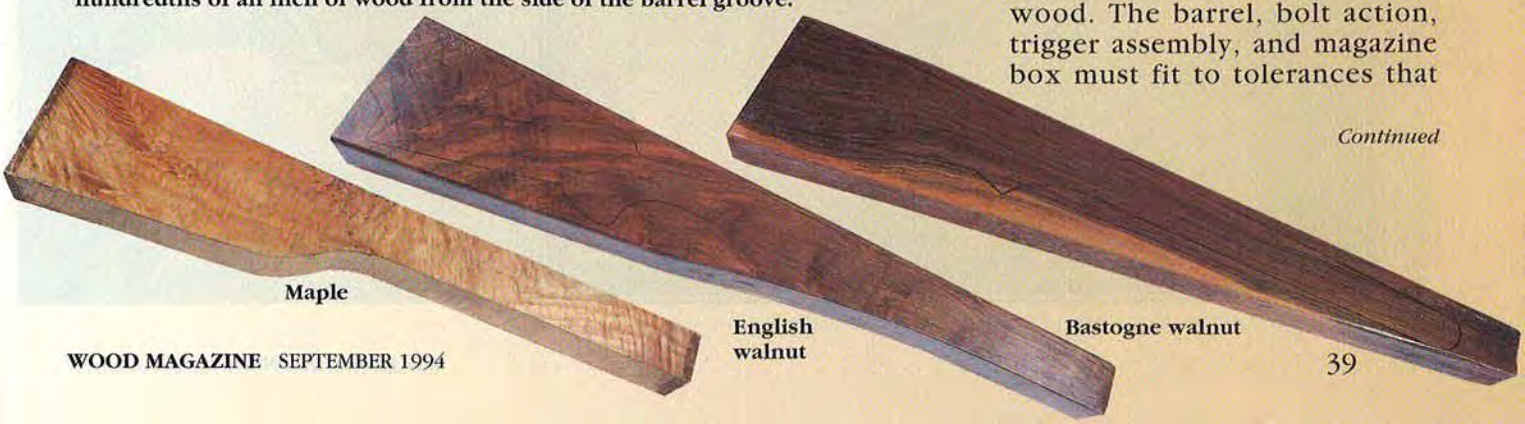


With inletting black covering the barrel on this soon-to-be 25-06, Bud pares a few hundredths of an inch of wood from the side of the barrel groove.



Maple **English walnut** **Bastogne walnut**

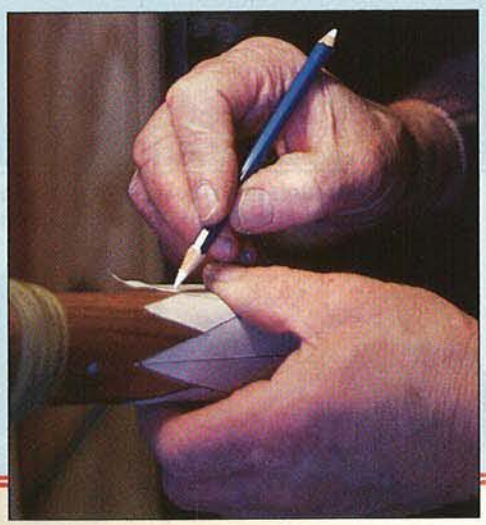
measure in the thousandths of an inch. For the final fittings, Bud coats each metal part with a carbon-based substance called "inletting black," then drops them down into their recesses. The inletting black marks the high spots on the wood, which Bud pares away with a chisel in paper thin shavings, as shown on in the photo on *page 39*.

Once the metal parts fit, Bud starts sanding with 60-grit sandpaper to bring the top surfaces of the wood and metal perfectly flush, and then continues with finer grits of sandpaper for finishing. When he reaches 220 grit, Bud adds Danish oil or tung oil to the stock and sands that in to help fill the pores, working up to a 600-grit paper. On the last few sandings Bud often switches to Dem-Bart oil, a special low-gloss oil made just for gun stocks. Most oils are too shiny for his tastes, says Bud. "I like to see the wood, not the finish."

Having fit the metal into the wood, Bud brings the two flush with careful sanding.

CHECKERING
The tell-tale detail

A metal foil pattern shows Bud where to mark the border of his cuts.



Carving a field of diamonds

Just before the final coat of oil, Bud pulls out his checkering tools and cuts the very fine diamond-shaped patterns around the grip and forearm of the rifle. Checkering provides a slip-resistant surface on the stock, and it's also a good indicator of a high-quality wood and a skilled gunsmith. With their density and tight grain patterns, the better woods support a much smaller checkering pattern, up to 32 lines per inch as opposed to 20 lines per inch for softer woods. And carving these tiny diamonds freehand, using nothing more than a V-tool and a metal-foil pattern as a guide, requires rock-steady hands and unflinching concentration. Even the slightest slip could require days of painstaking repair work.

After he has completed the woodworking, Bud disassembles the metal pieces for bluing, a process that knocks the shine off the metal and protects it from rust. With the bluing completed, the gun is ready. The whole process, from the first discussions with the buyer to delivery of the finished product, can take eighteen months or more. The customers get awfully anxious to put their hands on the gun, especially near hunting season.

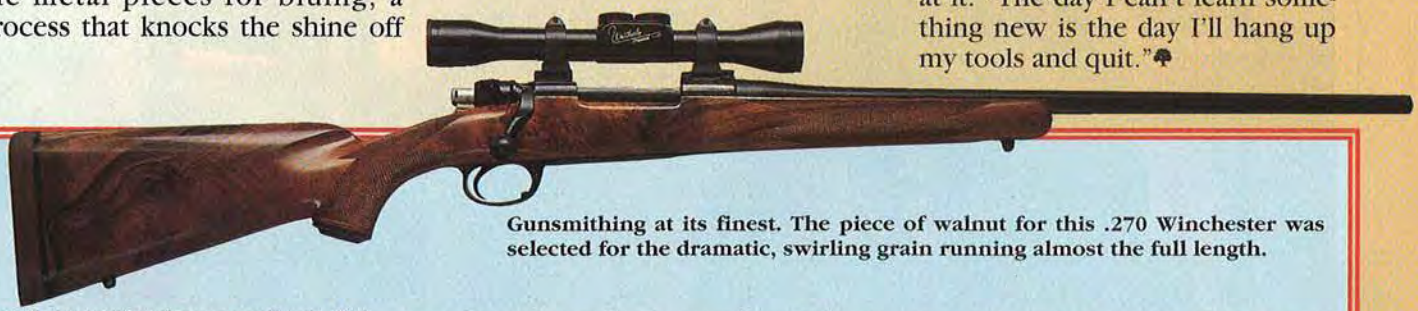
Bud himself gets mighty scarce once hunting season starts. At that point in the year you're not likely to find him in the shop. A better bet would be to look for him out in the mountains, miles from nowhere, crouched with a rifle behind a rock or a tree, looking for a big elk.

His life as a gunsmith

In the last ten years the interest in gunsmithing has grown, according to Bud, but only a handful of people make a living at building custom rifles. Most of the other gunsmiths around the country also hold down another job, or build rifles on the side as a retirement hobby.

Bud's single-minded devotion to his work won't ever make him rich, but it's still the only way to make a great rifle. And his lifelong pursuit of the perfect rifle has its own rewards—peace of mind, pride in work well done, and a shop where he can look out the window to a panoramic view of the mountains. At the top of his profession, Bud has developed the confidence to evaluate his work with an open mind. He's got the experience of nearly four decades with the enthusiasm of a beginner.

"I guess I've never been completely satisfied with any gun I've built," says Bud nonchalantly. That's probably what keeps me at it. "The day I can't learn something new is the day I'll hang up my tools and quit."



Gunsmithing at its finest. The piece of walnut for this .270 Winchester was selected for the dramatic, swirling grain running almost the full length.

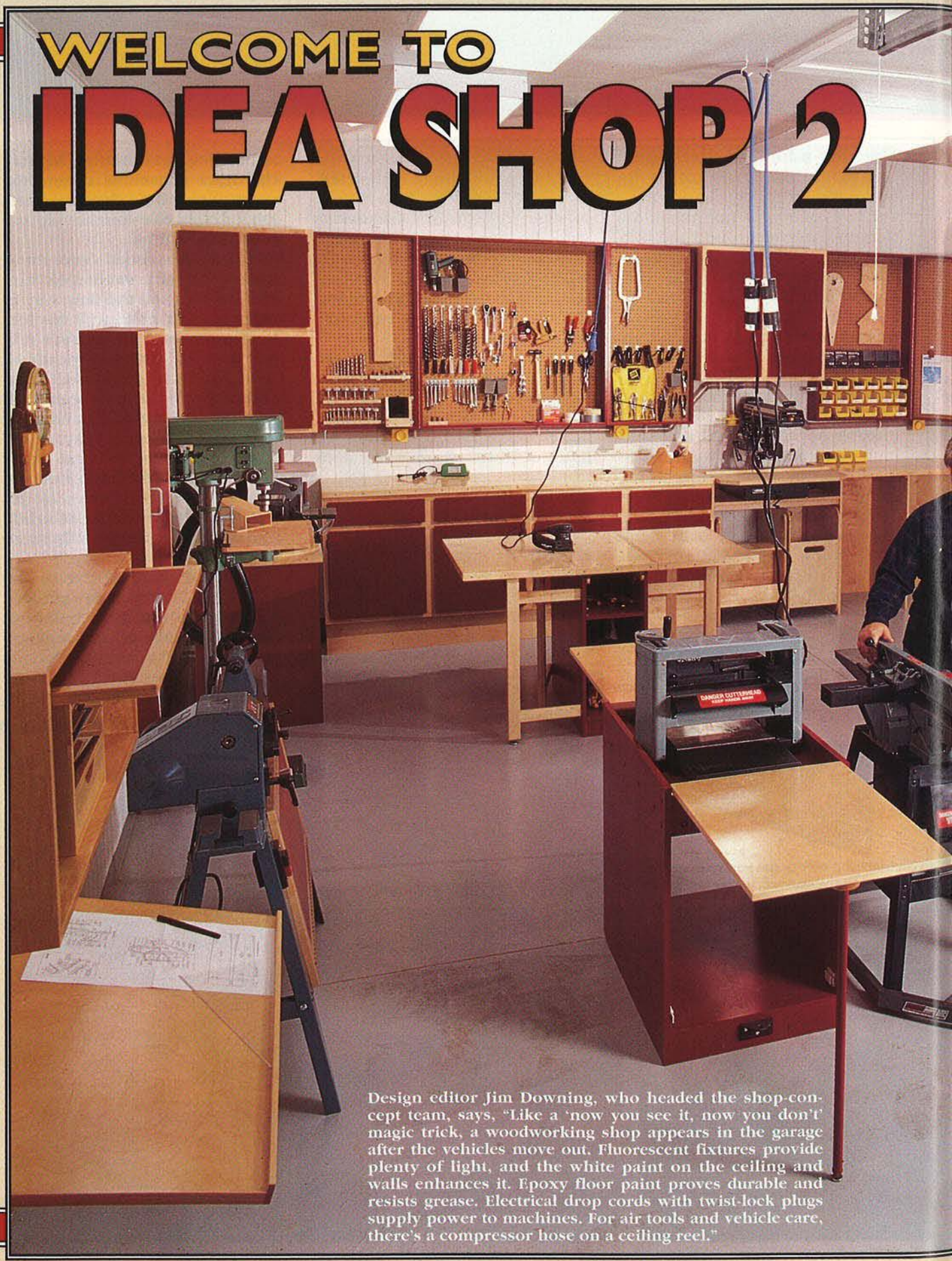
Crosshatching across the rows of parallel lines fills out the pattern.

Over the course of a day or more, Bud continually carves the grooves deeper.

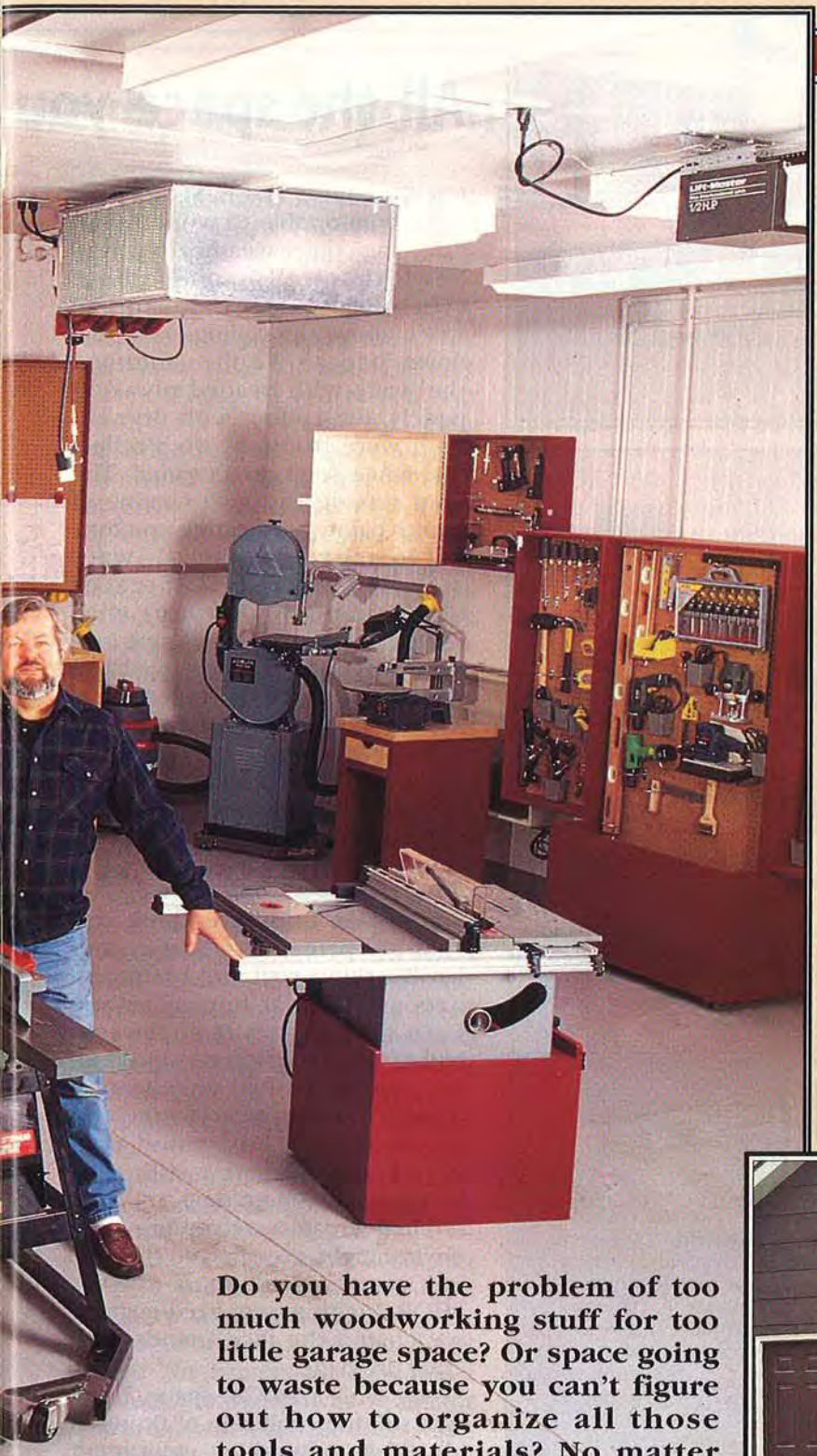
The end result: a perfect field of diamond shaped points.

Written by Tom Jackson Photographs by Tim Murphy Checkering photos: Margery Reitz

WELCOME TO IDEA SHOP 2



Design editor Jim Downing, who headed the shop-concept team, says, "Like a 'now you see it, now you don't' magic trick, a woodworking shop appears in the garage after the vehicles move out. Fluorescent fixtures provide plenty of light, and the white paint on the ceiling and walls enhances it. Epoxy floor paint proves durable and resists grease. Electrical drop cords with twist-lock plugs supply power to machines. For air tools and vehicle care, there's a compressor hose on a ceiling reel."



Do you have the problem of too much woodworking stuff for too little garage space? Or space going to waste because you can't figure out how to organize all those tools and materials? No matter which situation you're in, you'll find help in IDEA SHOP 2™. You'll learn why mobility is a must in garage shops—and how to achieve it. We'll also share some easy ways to solve storage-space problems—and still make room for family vehicles.

Print this article

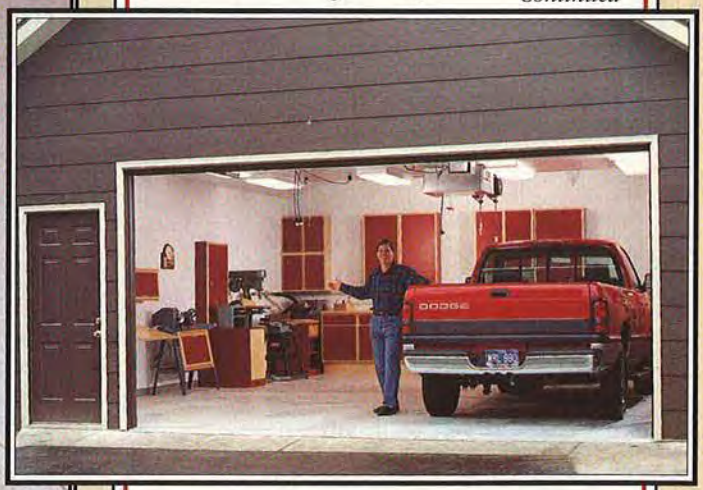
Here it is, woodworkers—the sequel to our first IDEA SHOP, which appeared in the September 1992 issue of *WOOD®* magazine. Like its predecessor, our new workshop was more than a year in the making. The creative thought, skill, and energy put into it by the staff was truly impressive. Even some of our readers participated.

In the first IDEA SHOP, we learned what it took to turn a 14×28' space into a serious woodworking shop. And most of the planning evolved from the concept that everything was more or less permanent.

IDEA SHOP 2 offers a different twist. You see, we know that many home woodworkers have their shop in a garage (usually occupied by a vehicle or two). So we took a standard 24×24' double-car garage and designed the space to accommodate a nifty shop—and the family transportation. To accomplish this, our project team had to think mobility, double-duty, comfort, security, and cost. But in the end, one great similarity with our first effort stands out: bunches of terrific, easily adaptable ideas! In this and future issues, we'll share them with you in the form of plans and step-by-step building instructions.

Larry Clayton
Editor

Continued



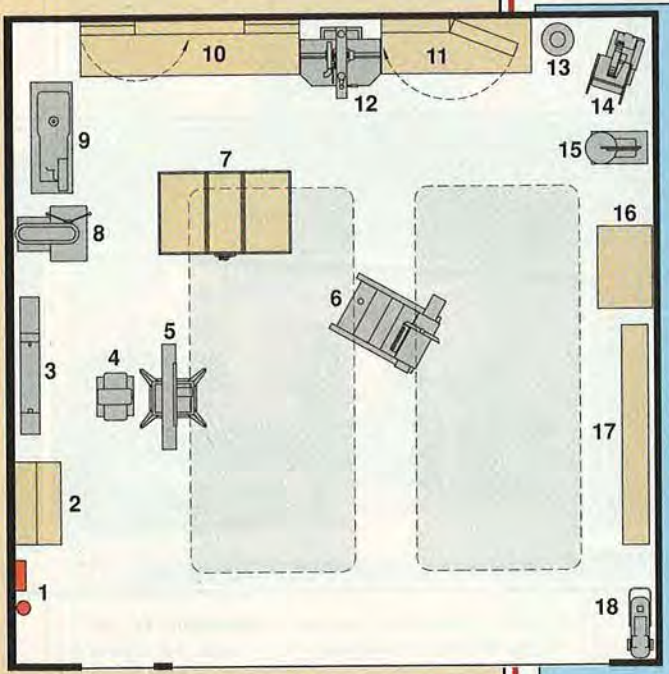
Above: **Security can be a problem in an unattached building. Through an open door, it's contents are on view. That's why IDEA SHOP 2 features lockable cabinets that conceal tools and supplies.**

Above: The sander, jointer, drill press, and planer find homes in the far-left corner of the shop (see floor plan). The lockable cabinet stores drill bits and other accessories. The sander and planer bases were shop built.

Compared to the first IDEA SHOP®, our two-car garage concept offers a much larger space. And here, you adjust the space according to the project you're building, maybe with a vehicle still in the garage. You have a lot of flexibility.

Project Designer

Above: The shop vacuum, from its position in the right corner of the shop, collects dust from a run of clear-plastic pipe. With a mobile base, the bandsaw can be positioned anywhere in the shop. Above the heater is the enclosed exhaust fan. The compressor hose connections are for spraying.



FLOOR PLAN

1. Phone/intercom, first aid. 2. Design and reference center 3. Lathe. 4. Planer. 5. Jointer. 6. Tablesaw. 7. Workbench. 8. Drill press. 9. Sander. 10-11. Cabinets. 12. Radial-arm saw. 13. Shop vacuum. 14. Bandsaw. 15. Scrollsaw. 16. Mobile tool chest. 17. Lumber storage. 18. Portable air compressor.

Note: Rectangular outlines on the garage floor represent vehicle parking spaces.

All the space you

To make IDEA SHOP 2™ comfortable to work in during cooler weather, we insulated the walls and ceiling. (There's also access to storage space above the ceiling via a pull-down ladder.) We then sheathed the walls with beaded plywood panels; the ceiling with drywall. Both were painted with a reflective white semi-gloss enamel. The floor received a tough coating of epoxy paint. For heating comfort, we installed two small, wall-mounted natural-gas furnaces (20,000 and 30,000 Btu) with sealed combustion chambers. Their positioning on one wall also conserves precious floor space. An open garage door and an exhaust fan supply cooling ventilation in the summer. A ceiling-mounted air-filtration unit cleans recirculated air in the winter.

The storage challenge

For storage units, we chose reasonably priced yet sturdy and hardworking wall and base cabinets available at home centers. Even though they're at the low end of the manufacturer's product line, the unfinished units feature dovetailed drawer fronts and maple-and-birch-plywood construction. And better still, they save valuable set-up time.

To help create a welcoming work environment, we sprayed the cabinet carcasses and doors of IDEA SHOP 2 with a bright red enamel; we coated the face frames with clear urethane.

Even with a 24×24' space, there was still the challenge of fitting in all the woodworking equipment and necessary shop furniture. A *WOOD*® magazine reader shared with us a portable workbench design with fold-down wings that tucks neatly away between base cabinets to the right of the radial-arm saw. Next to it, there's another parking spot just for the tablesaw and its mobile base cabinet.

need, when you need it

To get flexibility for various projects, yet allow for traditional garage uses, we added commercially made mobile bases to the jointer and the bandsaw. The tablesaw, planer, sander, and scrollsaw have shop-built mobile bases. These all utilize a clever tool-mover system for easy machine parking—again, an idea furnished by yet another *WOOD* magazine reader (watch for it and other ideas in a future issue).

To top things off, we designed and built a special two-sided tool chest on casters. It holds an assortment of clamps on one side and hand and power tools on the other, and parks along one wall. When needed, it can be wheeled alongside the mobile workbench.

How to clear the air

Unlike the first IDEA SHOP, we couldn't install a fixed dust-collection system to serve all possible work areas in this shop where flexibility is foremost. In IDEA SHOP 2, we opted for a shop-vacuum-based system with a fixed duct run between base and wall cabinets along the back wall. It has two countertop connections and directly serves the sander, radial-arm saw, drill press, and bandsaw. For dust collection to other machines, you roll out the vacuum and attach it.

Although IDEA SHOP 2 doesn't have a defined spray-finishing area, we allowed for it. In the far right corner of the shop, above one of the heaters, we mounted a through-the-wall power ventilator (covered when not in use). Right next to the vent is an oil-less connection for compressed air, for the times when you need to spray. (There's an oiled line for air tools on the ceiling-mounted reel in the center of the work area.)

A planning place

Along the wall to the left of the lathe, we created the perfect spot for design and reference work. As you can see in the photo *right*, its cabinet features storage for books, magazines, plans, and drawing utensils. Below the cabinet, a wall-hung drafting table lifts up to provide a work surface. A step stool that allows access to the upper reaches of the wall cabinets provides a seat for the drafting table.

To the left of the cabinet, we located the telephone—complete with intercom to the house and a flasher to signal incoming calls when the ringer is turned off. The first-aid kit and an ABC-rated fire extinguisher are handily adjacent to the phone.

Above: **Emergency numbers are posted near the telephone. The wall cabinet holds reference materials and plans. A fixture mounted beneath the cabinet sheds light on the countertop below.**

A special thanks to Stew Hansen's Dodge City, Des Moines, Iowa, for the 1994 Dodge Ram 1500 pickup truck shown on opening pages.

SHOP COMPONENTS

Air filtration
Model AC460 Air-Cleaning System
Penn State Industries
2850 Comly Rd., Philadelphia, PA 19154 800/377- 7297

Cabinets
Great Northern Cabinetry
P.O. Box 207, Rib Lake, WI 54470
715/427-5255

Fire extinguisher
First Alert Model FE10 Garage and Workshop Fire Estinguisher
Manufactured by BRK Electronics, 780 McClure Rd., Aurora, IL 60504
800/323-9005 or 708/851-7330

First-aid kit
Zee Medical, 22 Corporate Park, Irving, CA 92714-5105
800/841-8417

Furnaces
Models ASV120RTN-T (20,000 Btu), ASV730RTN-T (30,000 Btu)
Perfection Schwank, P.O. Box 749, Waynesboro, GA 30830
706/554-2102

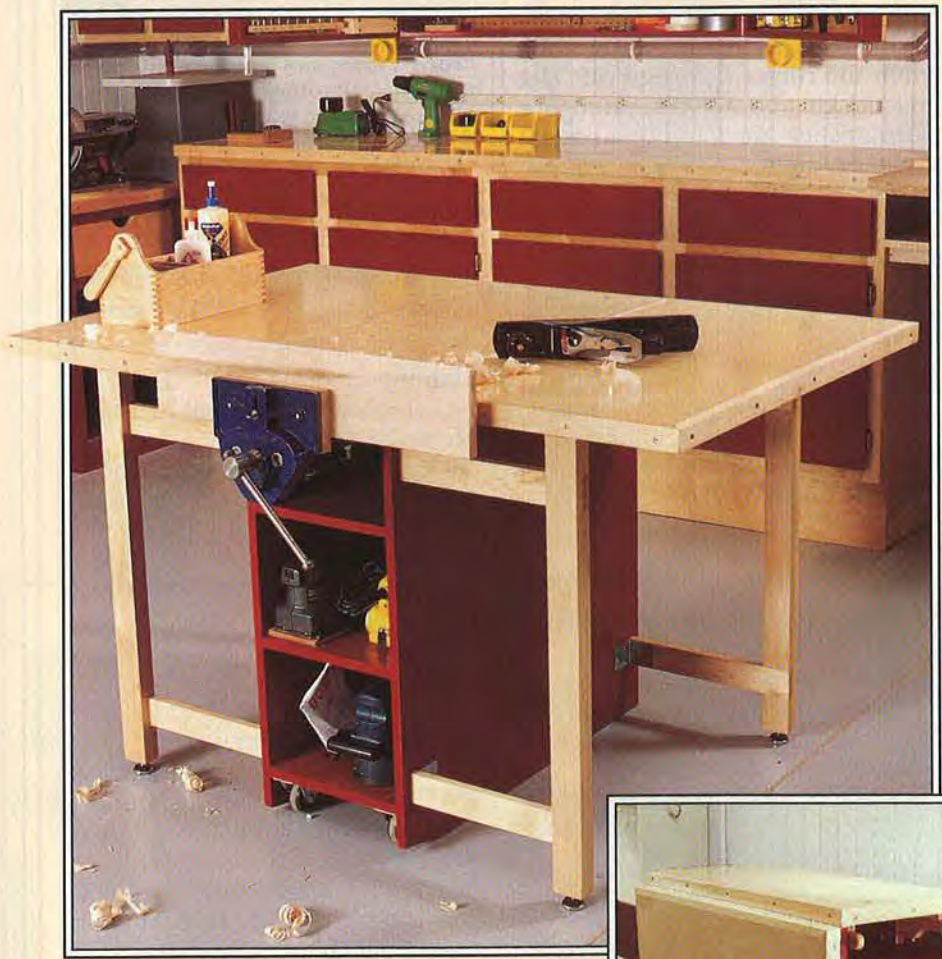
Lighting
Four-tube 4' fluorescent fixtures, no. 11233
Light Concepts Division of Lithonia Lighting, P.O. Box A, Conyers, GA 30207-0067
404/922-9000

Paint
Sherwin Williams (visit your local dealer)
Floor: Tile-Clade High Solids (two-part epoxy), gray
Walls and ceiling: Oil-base Interior Wall and Wood Primer; Super Paint Interior Semi-Gloss Latex Enamel
Cabinets: Ultra One-Stage paint and Ultra 7000 CC645 Urethane Clear Coat (automotive finishes)

Wall paneling
Ply-Bead 4x8' beaded plywood panels
Georgia-Pacific, 133 Peachtree St. N.E., Atlanta, GA 30303
404/521-4000

Photographs: Wm. Hopkins Illustration: Kim Downing

DROP-LEAF MOBILE WORKBENCH



SUPER-STURDY AND LOADED WITH STORAGE

Print this article

A rock-solid workbench that's mobile? In the past, this project might have sounded a little far-fetched, but not any more. A while back, *WOOD*® magazine reader Erv Roberts shared with us his garage/shop workbench design. Wanting to keep his cars inside during Iowa's cold, snowy winters, Erv needed a workbench with wheels so he could push it out of the way when the time came to bring his cars inside. He also wanted a workbench with fold-down leaves, giving him the most efficient against-the-wall storage possible. When Erv's hobby calls, his benchtop folds out to a full 36×58".

Start with the base cabinet for a solid foundation

1 Cut the two base side panels (A) to the size listed in the Bill of Materials from ¾" birch plywood.

2 Cut the base banding pieces (B, C) to size from ¾" maple. Glue the banding pieces to the panels where shown on the Base Side Panel drawing on the *opposite page*. See our shop tip on *page 12* for hints on banding edges. Sand the banding flush.

3 Using the same drawing for reference, mark the location of, and cut or rout ¾" dadoes and grooves ¼" deep into the mating inside surface of each plywood side panel.

4 Mark and cut a ¾×5" taper on the bottom rear corner of each side panel. When assembling the base later, the tapers must be directly across from each other. The tapers allow the casters to come in contact with the floor without the corners of the side panels rubbing against the floor when moving the workbench.

5 Cut the shelves (D) and dividers (E, F) to size from ¾" plywood. Now, cut a pair of notches in the upper corners of the top divider (E) where shown on the Base Cabinet drawing.
6 Cut the banding strips (G), and band both ends of each shelf (D).
7 Glue and clamp the shelves and dividers between the side panels, checking for square.
8 Cut the toe kick (H) and cleats (I) to size. Drill mounting holes through the cleats, attach them, and then screw the toe kick in place so the outside face of the toe kick is recessed ¼" from the outside surface of banding pieces C and G.

Add the pull-out handles and casters

1 Cut the handles (J) to size. Joint or plane each to 11/16" thick. Transfer the full-sized Handle Pattern to one end of each handle blank. Cut the contoured ends to shape. Then, rout or sand ⅛" round-overs along all edges.
2 Drill the ½" and ⅜" holes in the handle where dimensioned on the Handle Pattern. Cut four ⅜" dowels to 1½" long and glue them into the holes. The dowels act as stops when the handles are pushed and pulled in and out of the cabinet.
3 Cut the handle retainer cleats (K, L) and retainers (M) to size. Glue and screw the bottom cleats (L) to the retainers (M).
4 Turn the base cabinet upside down, and position the rigid casters flush with the inside face of the side panels (A) and outside face of the shelf banding (G). Drill pilot holes and screw the casters in place.

Build the plywood top

1 From ¾" birch plywood, cut the benchtop center panels (N) and outer leaf panels (O) to the sizes listed in Bill of Materials plus ½" in length and width.

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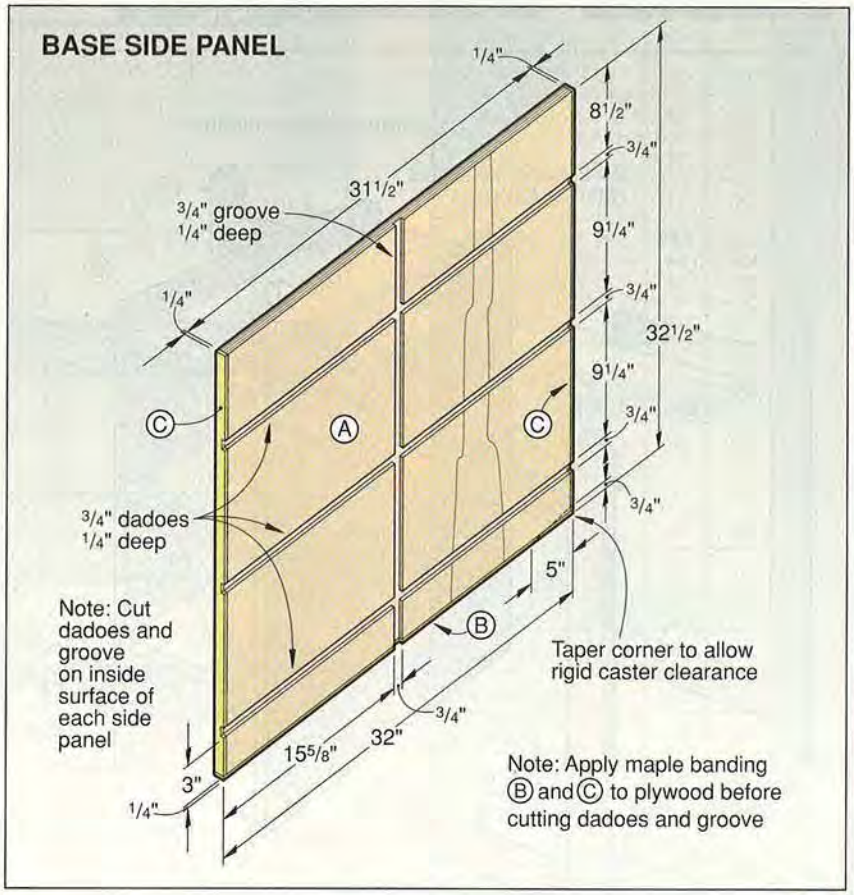
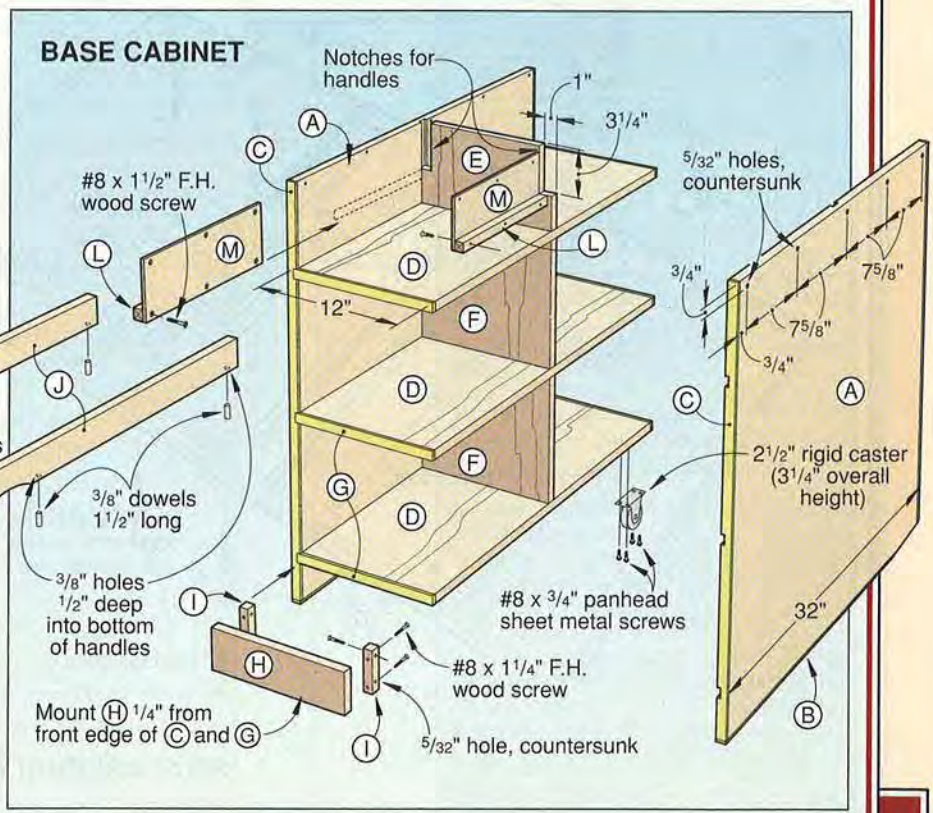
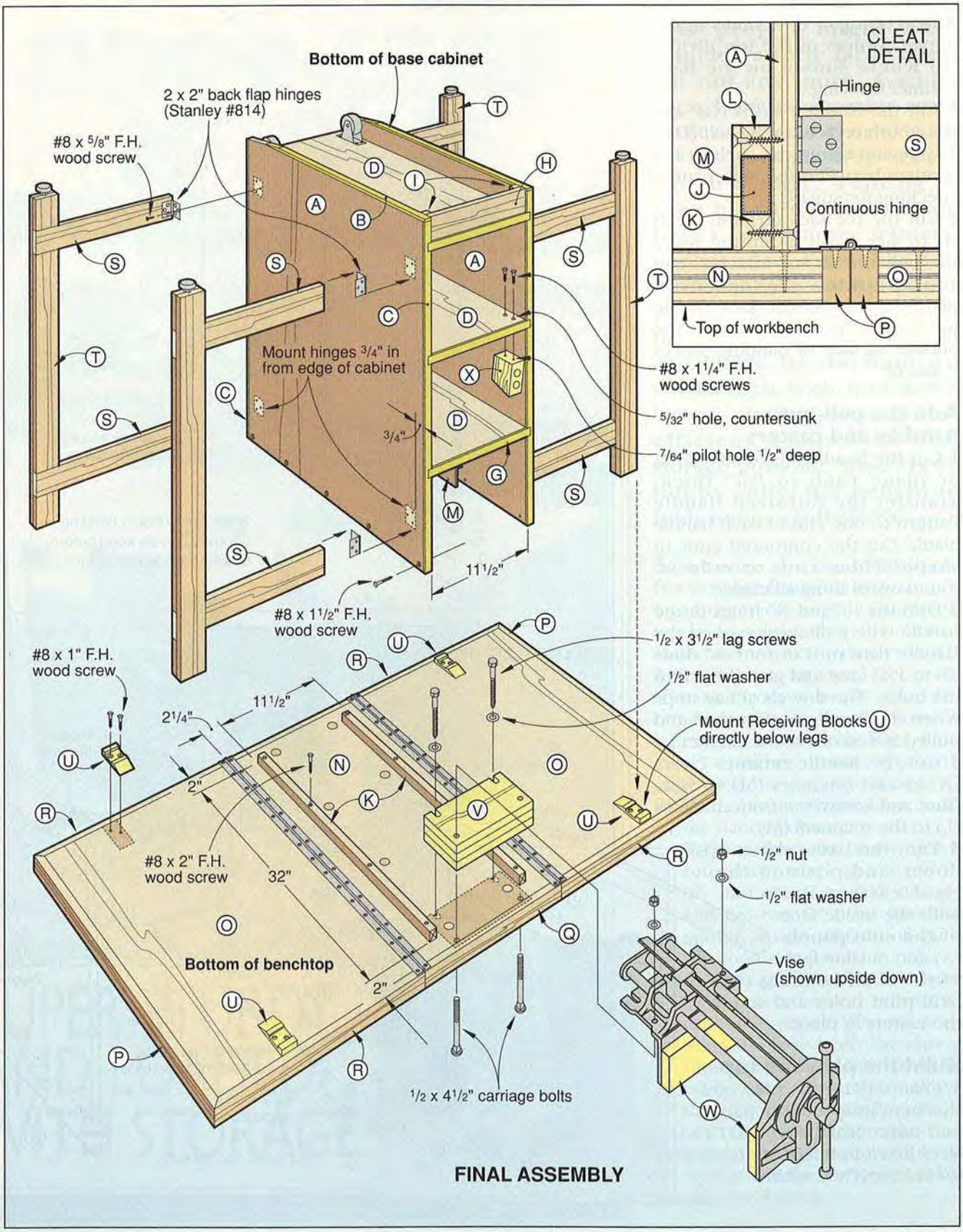
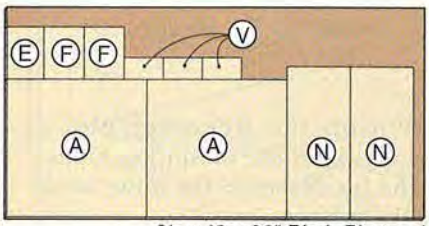




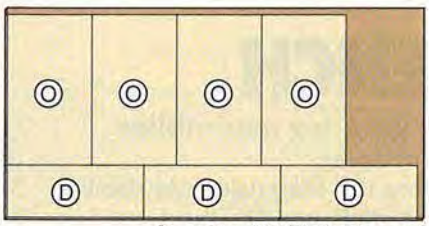
MOBILE WORKBENCH


Bottom of base cabinet
2 x 2" back flap hinges (Stanley #814)
#8 x 5/8" F.H. wood screw
Mount hinges 3/4" in from edge of cabinet
3/4"
11 1/2"
#8 x 1 1/2" F.H. wood screw
#8 x 1" F.H. wood screw
2 1/4"
2"
#8 x 2" F.H. wood screw
32"
Bottom of benchtop
1/2 x 4 1/2" carriage bolts
1/2 x 3 1/2" lag screws
1/2" flat washer
Mount Receiving Blocks (U) directly below legs
#8 x 1 1/4" F.H. wood screws
5/32" hole, countersunk
7/64" pilot hole 1/2" deep
CLEAT DETAIL
Hinge
Continuous hinge
Top of workbench
1/2" nut
1/2" flat washer
Vise (shown upside down)

FINAL ASSEMBLY



3/4 x 48 x 96" Birch Plywood



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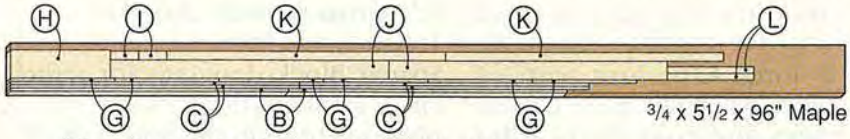
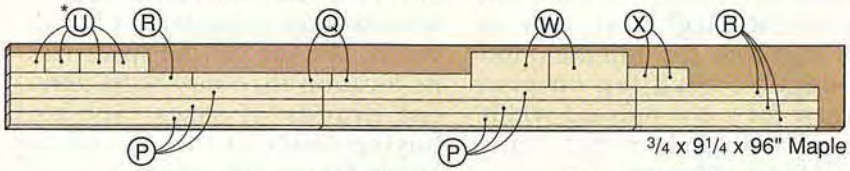
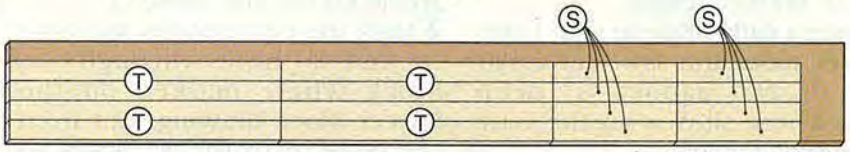


3/4 x 5 1/2 x 96" Maple

*Plane or resaw to thickness listed in Bill of Materials

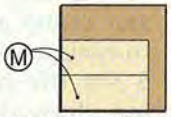


3/4 x 9 1/4 x 96" Maple

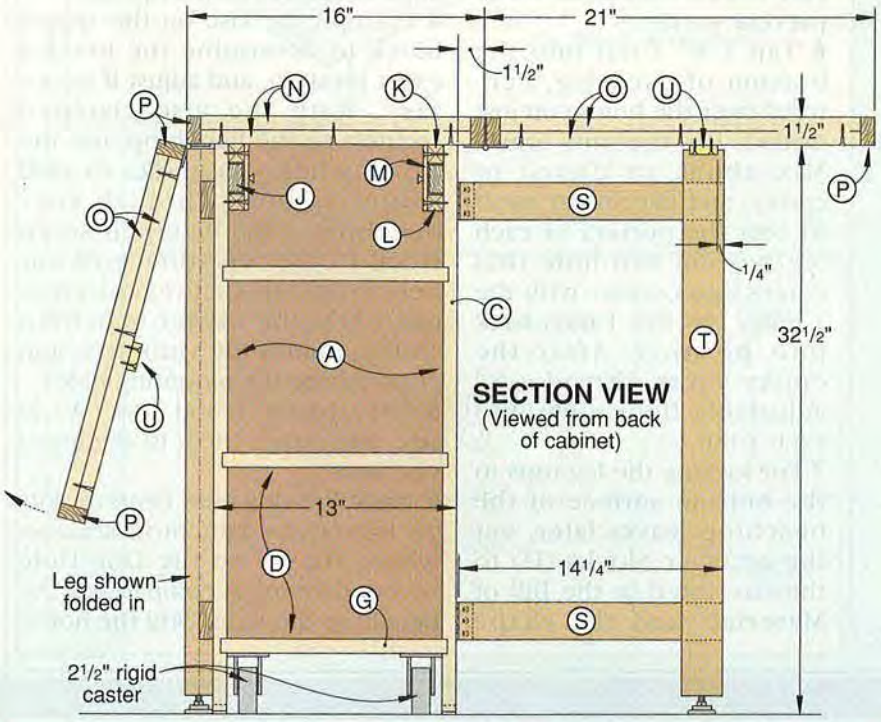


3/4 x 11 1/4 x 96" Maple

CUTTING DIAGRAM



1/4 x 12 x 12" Plywood



SECTION VIEW
(Viewed from back of cabinet)

Bill of Materials

Part	Finished Size* T	W	L	Matl.	Qty.
BASE					
A sides	3/4"	31 1/2"	32 1/4"	BP	2
B btm. bands	1/4"	3/4"	32"	M	2
C side bands	1/4"	3/4"	32 1/4"	M	4
D shelves	3/4"	12"	31 1/2"	BP	3
E divider	3/4"	12"	8 1/2"	BP	1
F dividers	3/4"	12"	9 1/4"	BP	2
G shelf bands	1/4"	3/4"	12"	M	6
H toe kick	3/4"	3 1/4"	11 1/2"	M	1
I cleats	3/4"	1"	3 1/4"	M	2
HANDLE ASSEMBLY					
J handles	11/16"	2 1/8"	32"	M	2
K cleats	3/4"	1"	32"	M	2
L cleats	3/4"	3/4"	10"	M	2
M retainers	1/4"	4"	10"	P	2
BENCHTOP					
N* center	3/4"	34 1/2"	14 1/2"	BP	2
O* leaves	3/4"	34 1/2"	19 1/2"	BP	4
P banding	3/4"	1 1/2"	36"	M	6
Q banding	3/4"	1 1/2"	16"	M	2
R banding	3/4"	1 1/2"	21"	M	4
GATE LEGS AND BLOCKS					
S rails	3/4"	2 1/4"	14 1/4"	M	8
T* legs	1 1/2"	2 1/4"	31 1/4"	LM	4
U rec. blocks	1/2"	2 1/4"	3 7/8"	M	4
VISE MOUNT AND JAWS					
V spacer block	2 1/4"	5"	9"	LBP	1
W vise jaws	3/4"	4"	9"	M	2
X dogholder	1 1/2"	2 1/4"	3 1/2"	LM	1

*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions. Note, we measure length with the grain.

Materials Key: BP–birch plywood, M-maple, P-plywood, LM-laminated maple, LBP-laminated birch plywood.

Supplies: #8x3/8", #8x1", #8x1 1/4", #8x1 1/2", and #8x2" flathead wood screws, 8–2x2" heavy duty hinges (Stanley #814 back flap hinge), 2 sections of 1 1/2" continuous hinge 36" long with #6x3/4" flathead wood screws, 3/8" dowel stock, 2–1/2x4 1/2" carriage bolts with flat washers and nuts, 2–1/2x3 1/2" lag screws with 1/2" washers, 2–2 1/2" (3 1/4" overall height) rigid casters with 8–#8x3/4" panhead sheet metal screws, 4–3/8" T-nuts, 4–3/8" nuts, 4 adjustable floor glides, clear finish, paint.

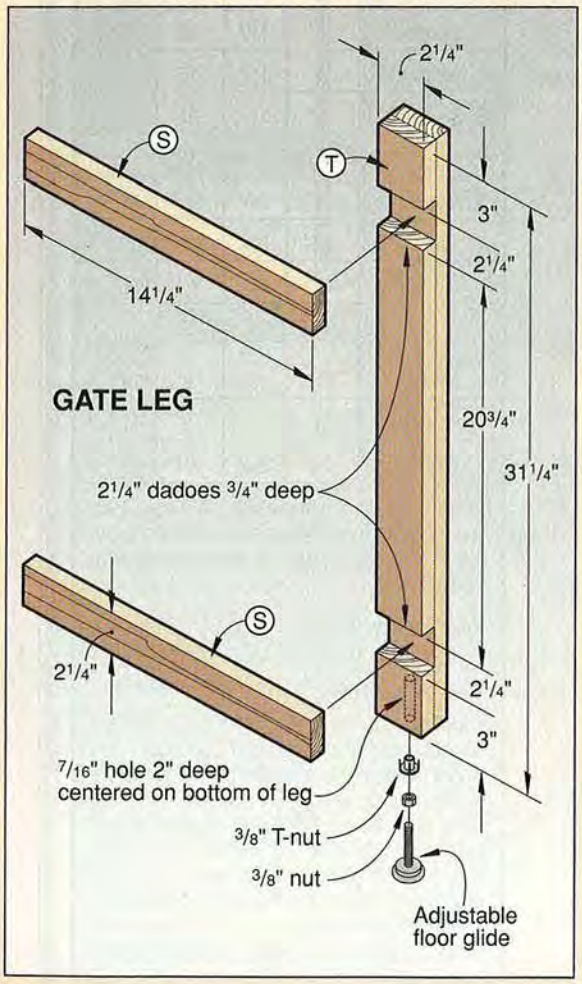
Buying Guide
Vise. Record 52-1/2D, 9" jaw width, 13" jaw opening, with quick-release mechanism. For the current price contact Seven Corners Hardware Inc., 216 W. 7 Street, St. Paul, MN 55102. Or call 800-328-0457 or 612/224-4859 to order.

MOBILE WORKBENCH

2 Glue and clamp the benchtop panels together in pairs with the edges and ends flush. See the Benchtop drawing for reference. (We used sliding-head type clamps around the perimeter. Then, we drilled and countersunk a few screw holes from the bottom side and added a few screws in the middle to pull the panels tightly together.)

3 Trim the laminated benchtop panels to the finished sizes listed in the Bill of Materials.

4 Rip to width and then miter-cut the banding strips (P, Q, R) to size. Drill countersunk mounting holes, and screw (no glue) them to the laminated benchtops.



The gate-leg assemblies come next

1 Using the dimensions in the Bill of Materials and on the Gate Leg drawing, cut the rails (S) to size.

2 To form the legs (T), cut eight pieces of ¾" maple to 2½" wide by 32" long. Glue four pairs of two pieces each face-to-face, with the edges and ends flush. After the glue dries, scrape it from one edge of each leg. Next, joint or plane that edge flat. Rip the opposite edge of each leg on your tablesaw for a 2¼" finished width. Crosscut both ends of each leg to a 31¼" finished length.

3 Using a dado blade in your tablesaw or radial-arm saw, cut a pair of 2¼" dadoes ¾" deep where shown on the Gate Leg drawing.

4 Checking for square, glue and clamp a pair of rails (S) to each leg (T).

5 On the bottom of each leg, draw diagonals to find center. Drill a 7/16" hole 2" deep at each centerpoint. (We used a brad-point bit to prevent wander.)

6 Tap a ⅜" T-nut into the bottom of each leg, centered over the holes you just drilled. Pry the nuts loose. Mix about an ounce of epoxy, and use an ear swab to coat the portion of each leg bottom and hole that comes into contact with the T-nuts. Tap the T-nuts back into position. After the epoxy cures, thread a ⅜" adjustable floor glide into each T-nut.

7 For locking the leg tops to the bottom surface of the benchtop leaves later, cut the receiver blocks (U) to the size listed in the Bill of Materials and the shape shown on the Receiver Block drawing. Drill the mounting holes. Set the blocks aside for now; we'll add them later.

It's time to add the vise

1 Using the Final Assembly and Spacer Block drawings for reference, laminate three pieces of ¾" plywood to form the spacer block (V). (We used a Record 52-1/2D woodworker's vise with a 9" jaw width. The size of your spacer and its location may vary with different brands of vises. See the Buying Guide at the end of the article for our vise source.)

2 Mark the centerpoints and bore ½" and ⅝" holes through the block where marked on the Spacer Block drawing. Cut from the edge in to the ⅝" holes to form ⅝"-wide slots where shown.

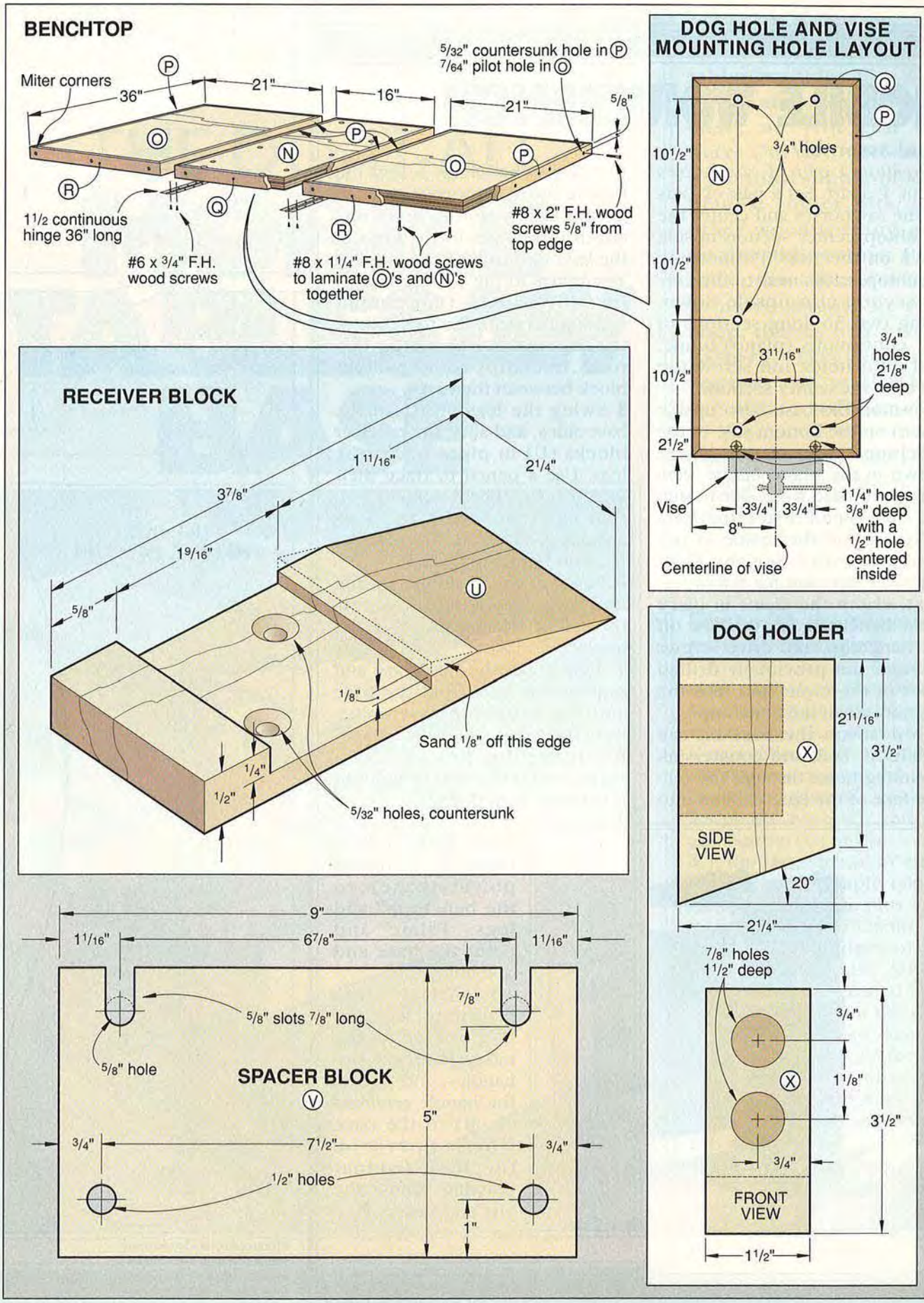
3 Clamp the spacer block (V) to the bottom side of the benchtop center section (N) where shown on the Final Assembly drawing. The outside edge of the block should be flush with the outside edge of the banding strip (Q).

4 Position the vise on the spacer block to determine the block's exact location, and adjust if necessary. With the vise clamped securely to the benchtop, use the existing holes as guides to drill mounting holes through your benchtop. (We clamped scrap stock to the top surface of our benchtop top to prevent chip-out.) Flip the center benchtop section (minus the vise) over, and counterbore the mounting holes.

5 Cut a pair of wood jaws (W) to size, and attach them to the metal vise jaws.

6 Mark the dog-hole centerpoints on the center benchtop section where shown on the Dog Hole Layout drawing accompanying the Benchtop drawing. Drill the holes.

Continued


BENCHTOP
Miter corners
36"
21"
16"
21"
5/8"
5/32" countersunk hole in P
7/64" pilot hole in O
P
O
N
R
Q
1 1/2 continuous hinge 36" long
#6 x 3/4" F.H. wood screws
#8 x 1 1/4" F.H. wood screws to laminate O's and N's together
#8 x 2" F.H. wood screws 5/8" from top edge
DOG HOLE AND VISE MOUNTING HOLE LAYOUT
Q
P
3/4" holes
10 1/2"
10 1/2"
10 1/2"
2 1/2"
3 11/16"
3/4" holes 2 1/8" deep
Vise
3 3/4"
3 3/4"
8"
Centerline of vise
1 1/4" holes 3/8" deep with a 1/2" hole centered inside
RECEIVER BLOCK
1 11/16"
2 1/4"
3 7/8"
1 9/16"
5/8"
U
1/8"
Sand 1/8" off this edge
1/4"
1/2"
5/32" holes, countersunk
DOG HOLDER
2 11/16"
3 1/2"
X
SIDE VIEW
20°
2 1/4"
7/8" holes 1 1/2" deep
3/4"
1 1/8"
3 1/2"
X
3/4"
FRONT VIEW
1 1/2"
9"
1 1/16"
6 7/8"
1 1/16"
7/8"
5/8" slots 7/8" long
5/8" hole
SPACER BLOCK
V
5"
3/4"
7 1/2"
3/4"
1/2" holes
1"

MOBILE WORKBENCH

Final assembly

1 Position a pair of saw horses about 4' apart. Set a pair of 2×4s on the sawhorses and center the benchtop center section upside down on the 2×4s. Position the benchtop leaves next to the center section also upside down. Using two 36"-long sections of 1½" continuous (piano) hinge, drill pilot holes and screw the leaves to the center section.

2 Position the base (also upside down) on the bottom side of the benchtop center section where shown in the photo *below*, centering the base from side-to-side and end-to-end. Place the long cleats (K) on the inside of the side panels (A). See the Final Assembly drawing for reference. Next, clamp the cleats in place to the benchtop. Lift the base off the benchtop, and drive screws through the previously drilled holes in the cleats and into the bottom side of the benchtop.

3 Reposition the base on the benchtop. Drill and countersink mounting holes through the outside face of the base cabinet into the cleats (K). Next, screw the base to the benchtop cleats.

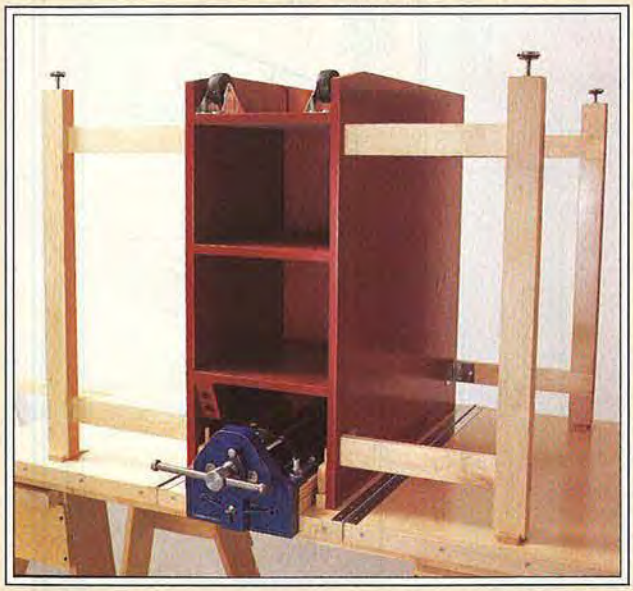
4 Drill the mounting holes and attach the hinges to the ends of the leg rails. Attach the hinge/leg assemblies to the outside face of the side panels. (For proper spacing between the top ends of the legs and the benchtop bottoms, we slipped a receiver block between the two.)

5 Swing the legs 90° from the base sides, and slide the receiver blocks (U) in place under the legs. Use a pencil to trace their location on the benchtop bottom surface. Swing the legs against the base, and screw the receiver blocks in place.

6 Position the handles (upside down) on the K cleats. Screw the handle retainer pieces (L ,M) in place.

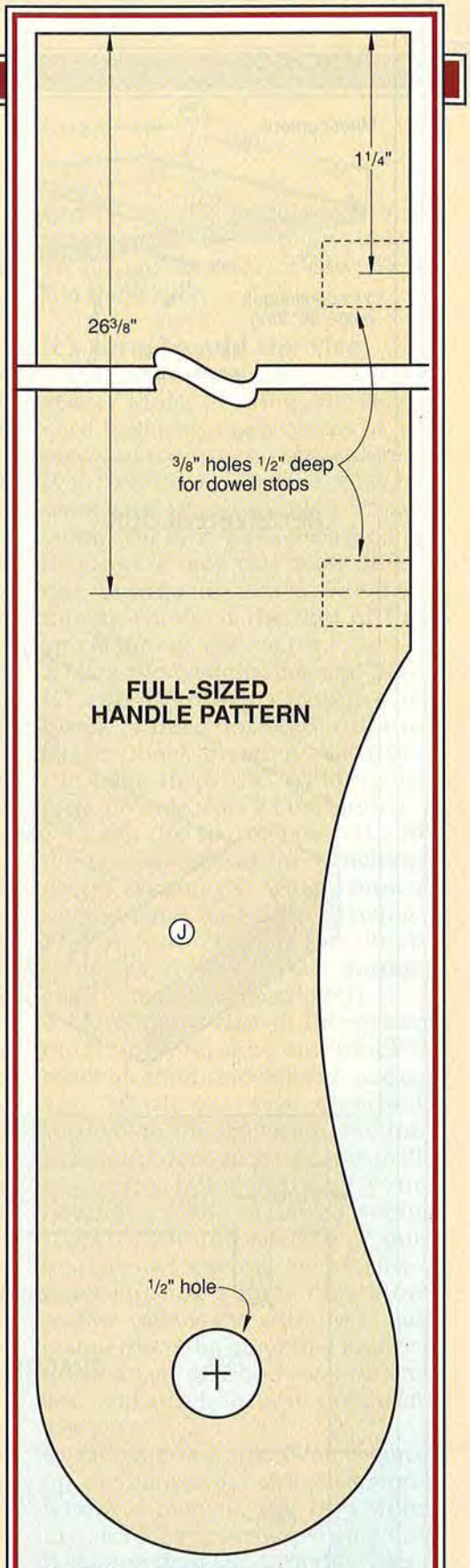
7 Remove all the hardware and remove the legs from the base and the benchtop assemblies from the base.

8 Cut the dog holder (X) to shape, and drill a pair of holes in it to house your dogs.



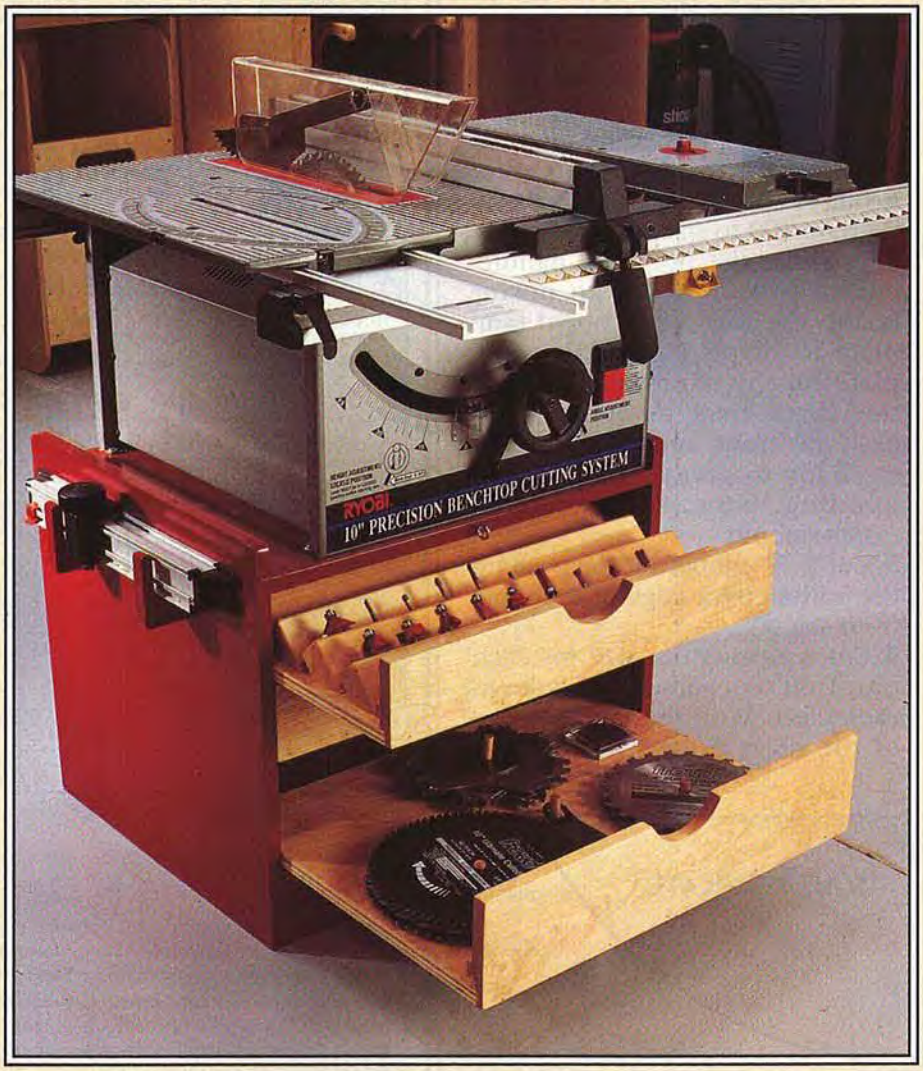
9 Sand all assemblies. Apply a clear finish (we used satin polyurethane) to the benchtops and legs. Prime and paint the base and dog holder.

10 Attach the benchtops, legs, and dog holder to the base. Position the handles, and screw the handle retainers (L, M) to the base where shown on the Base Cabinet drawing. Mount the vise and casters.



Produced by Marlen Kemmet
Project Design: Erv Roberts
Illustrations: Kim Downing
Photographs: Bill Hopkins

THE DO-IT-ALL MOBILE TABLESAW BASE



It's sad but true that the space beneath most tablesaws goes to waste. But that needn't be the case, as you can see here. Our cabinet stores a plentiful supply of sawblades, router bits, and other woodworking gear on the sliding trays. Plus, the entire cabinet is easy to move around in your shop, thanks to a pair of casters. Just store it against the wall when the cutting is done.

Note: *Our cabinet was made to fit a Ryobi BT3000 benchtop tablesaw. You might need to change the overall dimensions to fit your particular benchtop saw.*

Start with the plywood panels and edging

1 Cut the sides (A, B) to the sizes listed in the Bill of Materials from ¾" birch plywood. Note that side A is ¾" shorter than side B to allow for clearance against the floor later after adding the casters.

2 Cut the back (C) and top and bottom (D) to size.

3 From the edge of ¾"-thick stock, rip the maple edging (E, F, G, H) to size plus 1" in length. Glue and clamp the edging to the edges of the plywood panels where shown on the Exploded View drawing. Later, trim the ends of the edging flush. See the shop tip on *page 12* for our method of trimming the edges of the solid-stock edging flush with the surfaces of the plywood.

4 Mark the locations of the rabbets, grooves, and dadoes in the plywood panels (A, B, C), and cut or rout them to the sizes listed on the

Continued

Print this article

TABLESAW BASE

Exploded View drawing. (We fit our tablesaw with a ¾" dado blade and wooden auxiliary rip fence to cut the dadoes, rabbets, and grooves. Then, we test-cut scrap pieces first to verify a snug fit of the plywood pieces in the dadoes and grooves.)

Add the tray supports

1 From ¼" hardboard, cut the tray supports (I, J) to size.

2 Position and screw the bottom supports (J) 1" above the bottom dado. Then, using a piece of ¾"-thick stock as a spacer, position the remaining supports (I), drill screw-mounting holes, and screw the supports in place as shown in the photo *above right*. (Note that we placed a long piece of ¾"-thick walnut in the bottom ¾" dadoes to align the two side panels (A, B) before attaching the supports.)

Let the assembly begin

1 Dry-clamp the plywood panels (A,B,C D) together to check the fit, and trim if necessary. Then, glue and clamp the pieces, checking for square. (To prevent unsightly glue stains on the plywood, we placed masking tape next to the glue joints before gluing. Later, after the glue dried, we peeled off the tape, taking the glue squeeze-out with it.)

2 Measure the length of the opening, and cut the toekick (K) to shape, tapering the corner where dimensioned on the Wheel detail accompanying the Exploded View drawing. Drill countersunk screw holes, and glue and screw the toekick in place.

3 Turn the assembled tablesaw base upside down, drill the mounting holes, and screw the 2½" rigid casters in place.

4 Cut the border strips (L) to size. Drill the countersunk screw holes where shown on the Exploded View drawing. Screw the strips to the top of the cabinet.

Add the three trays for plenty of storage

1 From ¾" maple, rip and crosscut the tray fronts (M, N) to size. From ¾" plywood, cut the tray bottoms (O) to size.

2 Transfer the full-sized handle-cutout pattern *below* to poster board. Cut the poster board template to shape. Center the template on the front face of each tray front. Trace its outline onto each tray front, and cut the radius to shape to create the concave opening. Now, sand the tray fronts smooth.

3 Cut a ¾" rabbet ⅜" deep along the bottom back edge of each tray front (M, N).

4 Cut a cleat (P) to size for each tray. Drill six countersunk holes in each cleat. With the bottom edge of the cleat flush with the top

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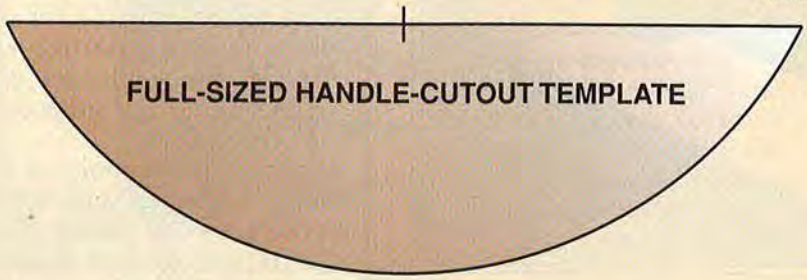


For evenly spaced tray supports, use a piece of ¾"-thick stock to position the pieces before screwing them in place.

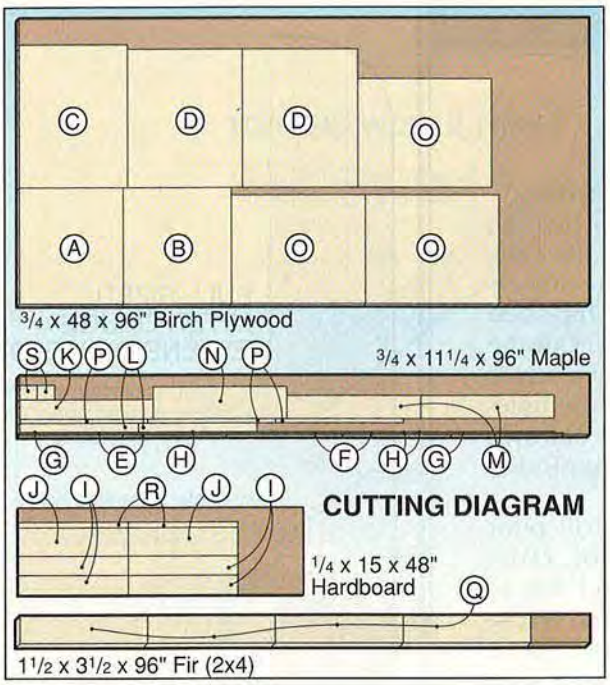
Bill of Materials

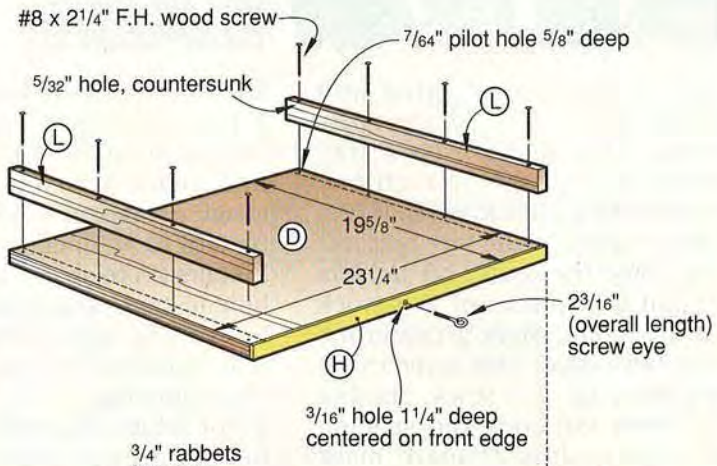
Part	Finished Size T	W	L	Matl.	Qty.
A side	¾"	19½"	19¼"	BP	1
B side	¾"	19½"	20"	BP	1
C back	¾"	23¼"	20"	BP	1
D top & bottom	¾"	23¼"	19⅜"	BP	2
E edging	¼"	¾"	19¼"	M	2
F edging	¼"	¾"	20"	M	2
G edging	¼"	¾"	20"	M	2
H edging	¼"	¾"	23¼"	M	3
I supports	¼"	3¾"	18½"	HB	4
J supports	¼"	5½"	18½"	HB	2
K toekick	¾"	3¼"	22½"	M	1
L strips	¾"	1½"	20"	M	2
M fronts	¾"	4⅜"	22⁷⁄₁₆"	M	2
N front	¾"	6⅛"	22⁷⁄₁₆"	M	1
O bottoms	¾"	18¼"	22⁷⁄₁₆"	BP	3
P cleats	¾"	1"	21⁷⁄₁₆"	M	3
Q holders	1½	2⁷⁄₁₆"	21⁷⁄₁₆"	F	8
R slides	¼"	1"	18½"	HB	2
S holders	¾"	2¼"	3½"	M	2

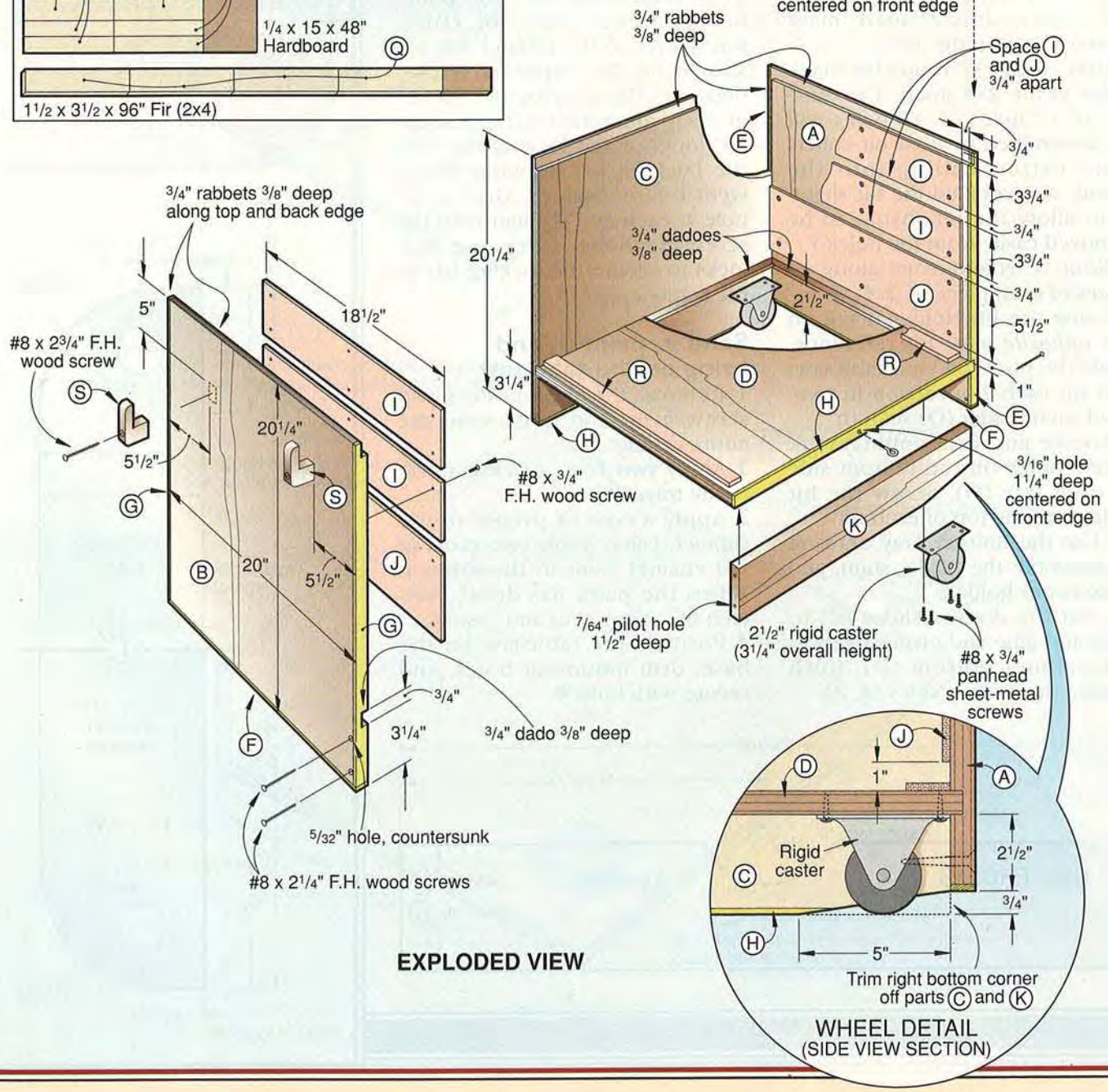
Length measured with the grain.

Materials Key: BP–birch plywood, M–maple, HB–hardboard, F–fir.

Supplies: #8×¾", #8×1¼", #8×1½", #8×2¼", #8×2¾" flathead wood screws, 2–2⁹⁄₁₆" (overall length) screw eyes, ¼×1×15" aluminum bar stock for locking bar, 2–2½" rigid casters (3¼" overall height) with 8–#8×¾" panhead sheet-metal screws, ⅜" dowel stock, ½" dowel stock, primer, red enamel paint, clear finish.


C D D O
A B O O
3/4 x 48 x 96" Birch Plywood
S K P L N P
3/4 x 11 1/4 x 96" Maple
G E H F H G M
J I R J I
CUTTING DIAGRAM
1/4 x 15 x 48" Hardboard
Q
1 1/2 x 3 1/2 x 96" Fir (2x4)


#8 x 2 1/4" F.H. wood screw
7/64" pilot hole 5/8" deep
5/32" hole, countersunk
L
D
19 5/8"
23 1/4"
2 3/16" (overall length) screw eye
H
3/16" hole 1 1/4" deep centered on front edge


3/4" rabbets 3/8" deep
Space I and J 3/4" apart
3/4" rabbets 3/8" deep along top and back edge
3/4" dadoes 3/8" deep
20 1/4"
18 1/2"
5"
#8 x 2 3/4" F.H. wood screw
S
5 1/2"
20"
B
G
F
3/4"
3 1/4"
3/4" dado 3/8" deep
5/32" hole, countersunk
#8 x 2 1/4" F.H. wood screws
#8 x 3/4" F.H. wood screw
2 1/2"
R
H
K
3/16" hole 1 1/4" deep centered on front edge
7/64" pilot hole 1 1/2" deep
2 1/2" rigid caster (3 1/4" overall height)
#8 x 3/4" panhead sheet-metal screws
EXPLODED VIEW
Rigid caster
1"
5"
Trim right bottom corner off parts C and K
WHEEL DETAIL
(SIDE VIEW SECTION)

TABLESAW BASE

edge of the rabbet, glue and screw the cleats to the tray fronts. Glue and screw a tray front/cleat assembly to each tray bottom (O), checking that the front is square to the tray bottom.

5 To make the router bit holders (Q), cut four pieces of 2×4 stock to 21 7/16" long. Mark a centerline along *both edges* (not surfaces) of each piece of 2×4 stock. Starting 1 23/32" from the ends and spacing the centerpoints 2" apart, mark centerpoints on the 2×4".

6 Drill ¼" and ½" router-bit shank holes in the 2×4 stock. The number of ¼" holes vs. ½" holes will be determined by your bit collection. (After drilling into the wood, we wobbled the bit slightly to allow the bit shanks to be removed easily from the holes.)

7 Rout ¼" round-overs along all edges of each piece of 2×4.

8 Using the Bit Holder detail on the *opposite page* for reference, angle the blade on your tablesaw, and rip each 2×4 section in two. Sand each holder (Q) smooth.

9 Locate and drill countersunk screw holes on the bottom side of each tray (O). Screw the bit holders to the top of each tray.

10 Use the Bottom Tray drawing to assemble the blade, shim, and dado-cutter holders.

11 Cut the drawer slides (R) to size, and glue and clamp them to the cabinet bottom (D), flush against the cabinet sides (A, B).

Consider a few add-ons

1 For hanging the miter-gauge extension on the side of the cabinet, twice transfer the miter-gauge extension holder full-sized pattern to ¾"-thick stock. Cut the holders (S) to shape, drill a screw hole in each, and screw the holders to the side of the cabinet where shown on the Exploded View drawing.

2 For added security, drill pilot holes and add a pair of 2 13/16" screw eyes to the cabinet where shown on the Exploded View drawing. Then, crosscut a piece of ¼×1" aluminum bar stock to 15" long for the locking bar (see the Locking Bar drawing *below right* for reference). Drill a 5/16" hole at each end to align with the screw-eye holes. Later, use padlocks to secure the locking bar to the screw eyes.

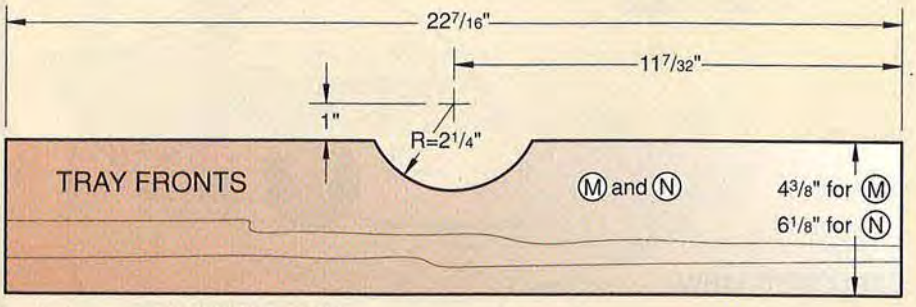
Sand it, paint it, and bring on the tablesaw

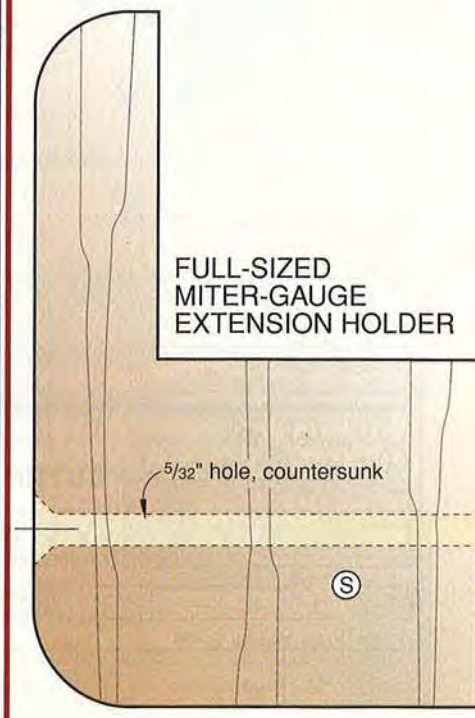
1 Remove the rigid casters and screw eyes, and finish-sand the entire cabinet.

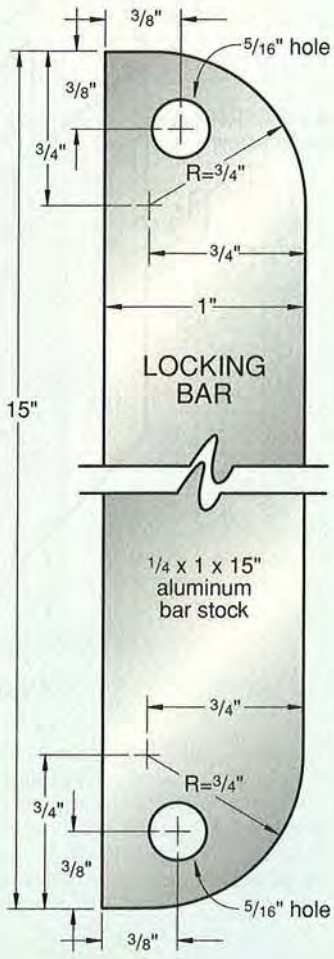
2 Apply two coats of clear finish to the trays.

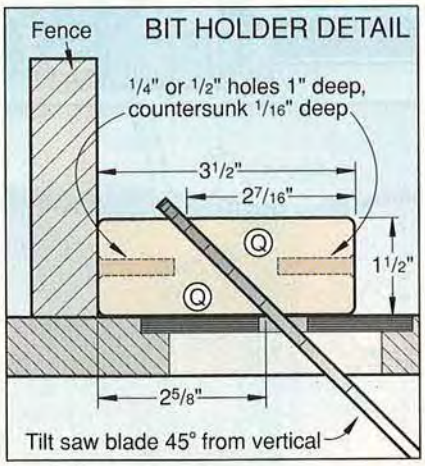
3 Apply a coat of primer to the cabinet. Later, apply two coats of red enamel paint to the cabinet. When the paint has dried, reattach the screw eyes and casters.

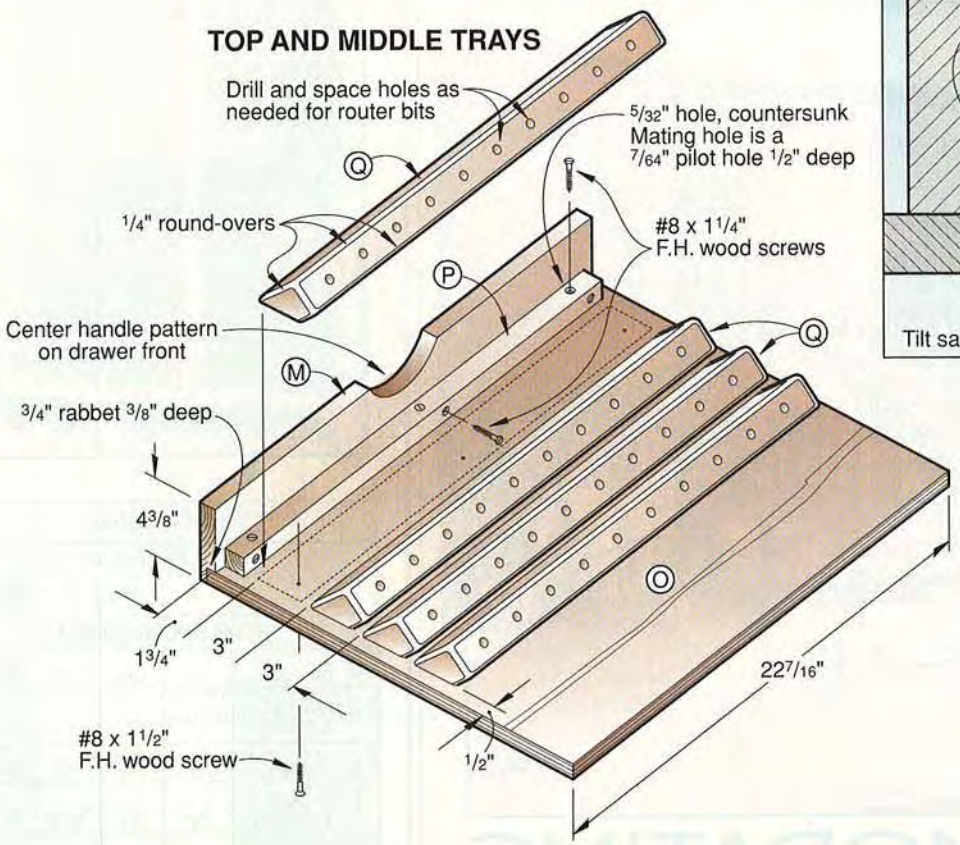
4 Position the tablesaw on the base, drill mounting holes, and secure with bolts.

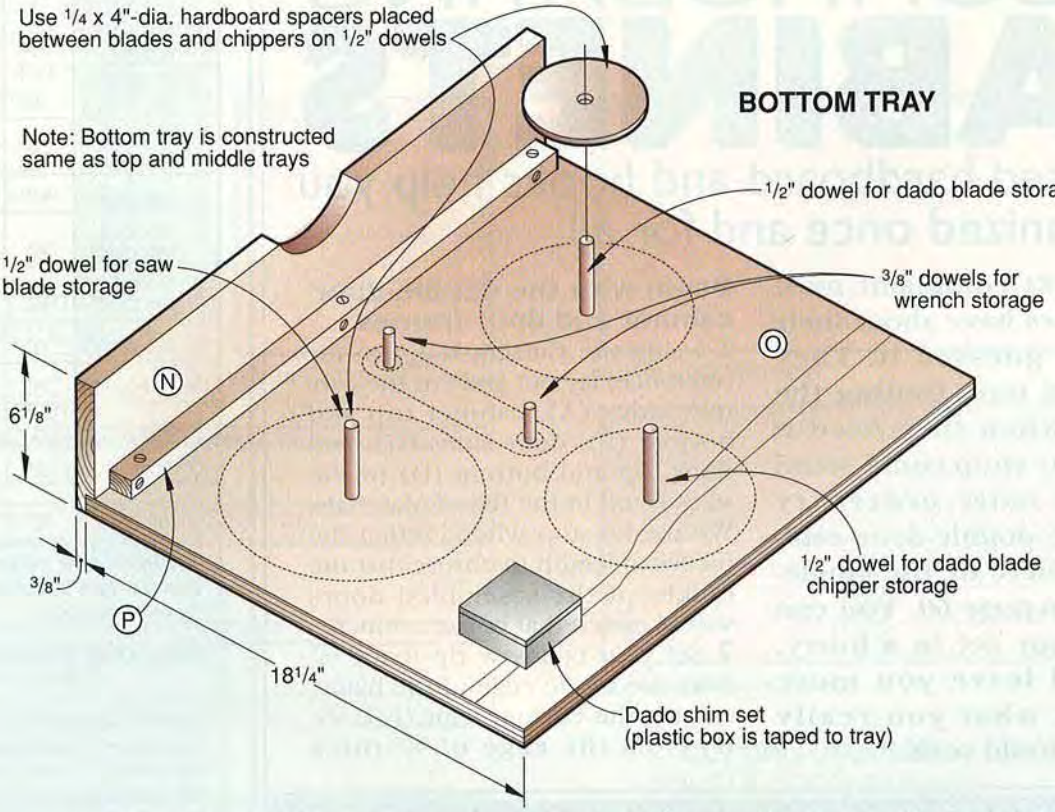











Use 1/4 x 4"-dia. hardboard spacers placed between blades and chippers on 1/2" dowels
BOTTOM TRAY
Note: Bottom tray is constructed same as top and middle trays
1/2" dowel for dado blade storage
1/2" dowel for saw blade storage
3/8" dowels for wrench storage
O
N
6 1/8"
3/8"
P
18 1/4"
1/2" dowel for dado blade chipper storage
Dado shim set (plastic box is taped to tray)

Produced by Marlen Kemmet Project Design: James R. Downing Illustrations: Kim Downing Photographs: John Hetherington

ACCOMMODATING CABINETS

Perforated hardboard and hooks help you get organized once and for all

What's the #1 complaint most woodworkers have about their shop? You guessed it. They have a hard time finding the right tool when they need it most. If your shop could stand a little bit more order, try building the double-door cabinet shown here or the single-door unit on *page 60*. You can clean up your act in a hurry, which will leave you more time to do what you really want to do–build stuff.

Begin with the double-door cabinet and door frames

1 Using the Cutting Diagram for reference, lay out and cut the cabinet sides (A), cabinet top and bottom (B), door sides (C), and door top and bottom (D) to the sizes listed in the Bill of Materials. We used a stop when cutting the pieces to length to ensure that the height of the assembled doors would match that of the cabinet.

2 Set your tablesaw rip fence ¼" from the inside edge of the blade, and rip the edging strips (E, F, G, H) from the edge of ¾"-thick

Print this article

Text continues on page 60

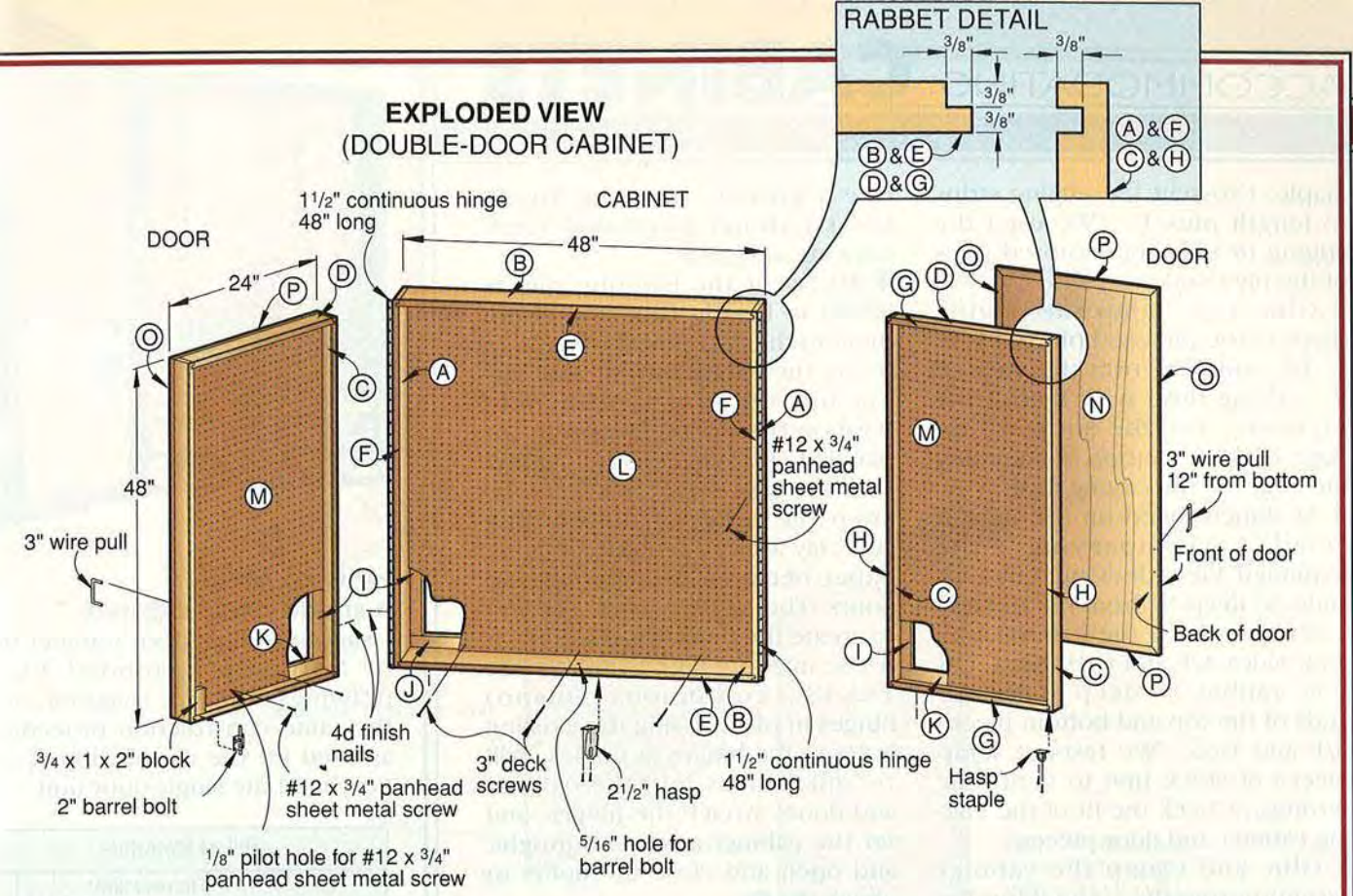
Bill of Materials

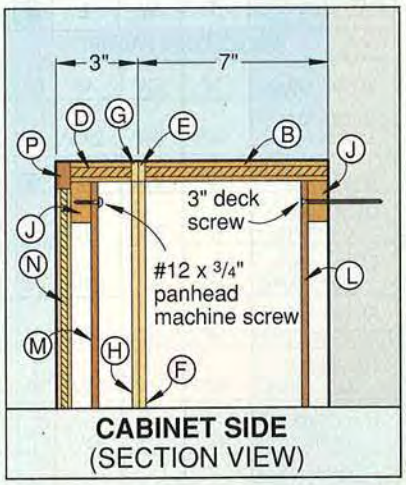
Part	Finished Size T	W	L	Matl.	Qty.
DOUBLE-DOOR CABINET					
A cab. sides	¾"	6¾"	48"	BP	2
B cab. top & bottom	¾"	6¾"	47¼"	BP	2
C dr. sides	¾"	2¼"	48"	BP	2
D dr. tops & bottoms	¾"	2¼"	23¼"	BP	4
E* cab. top & btm. edging	¼"	¾"	47¼"	M	2
F* cab. side edging	¼"	¾"	48"	M	2
G* dr. top & btm. edging	¼"	¾"	23¼"	M	4
H* dr. side edging	¼"	¾"	48"	M	4
I side cleats	¾"	1½"	43½"	P	6
J cab. top & btm. cleats	¾"	1½"	46½"	P	2
K dr. top & btm. cleats	¾"	1½"	22½"	P	4
L cab. pegbrd.	¼"	46½"	46½"	PB	1
M dr. pegbrd.	¼"	22½"	46½"	PB	2
N door panels	½"	22"	46"	BP	2
O* sides	½"	1"	48"	M	4
P* top & btm. bands	½"	1"	24"	M	4

*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

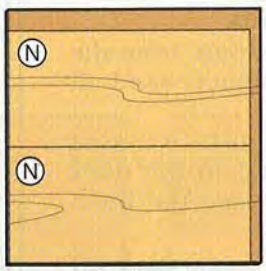
Materials Key: BP–birch plywood, M–maple, P–pine, PB–pegboard.

Supplies: 4d finish nails, #12×¾" panhead sheet metal screws, 3" deck screws, 2–1½×48" continuous hinge, 2–3" wire pulls, 2½" hasp, 2" barrel bolt, padlock, enamel paint, satin polyurethane.

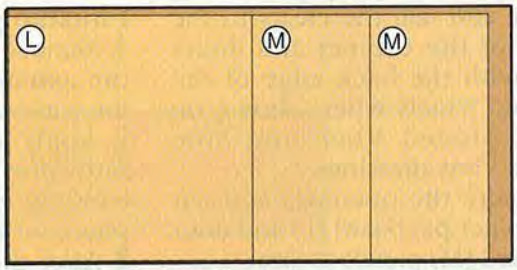




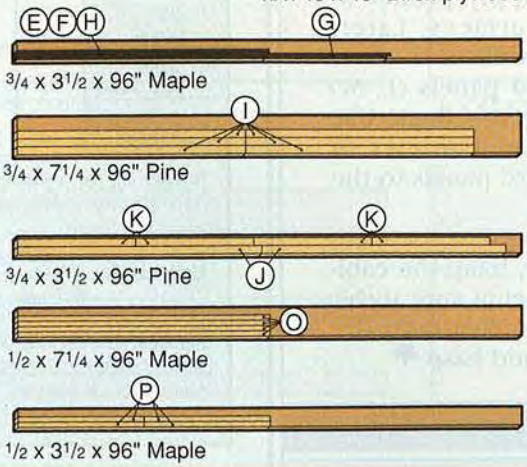
CABINET SIDE
(SECTION VIEW)

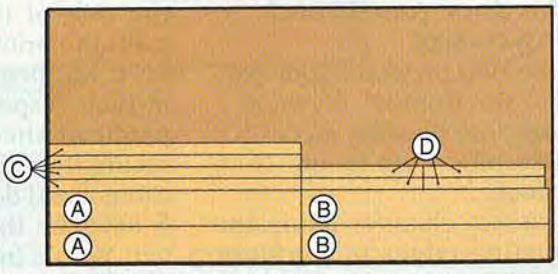


1/2 x 48 x 48" Birch plywood



1/4 x 48 x 96" Pegboard





3/4 x 48 x 96" Birch plywood

CUTTING DIAGRAM
(DOUBLE-DOOR CABINET)

maple. Crosscut the edging strips to length plus 1". (We used the edging to hide the exposed plies of the plywood pieces.)

3 Glue and clamp the edging strips to the plywood pieces (A, B, C, D), and later trim the ends of the edging flush with that of the plywood. See the shop tip on *page 12* for a method of trimming the edges of the edging flush.

4 As dimensioned on the Rabbet detail accompanying the Exploded View drawing, cut a ⅜" dado ⅜" deep ⅜" from the top and bottom ends of the cabinet and door sides A/F and C/H. Next, cut a ⅜" rabbet ⅜" deep along the ends of the top and bottom pieces B/E and D/G. (We test-cut scrap pieces of stock first to verify the settings.) Check the fit of the mating cabinet and door pieces.

5 Glue and clamp the cabinet assembly together, checking for square. Repeat the process to assemble the two doors.

Now, add the cleats and pegboard

1 Cut the cabinet and door cleats (I, J, K) to size from ¾" pine.

2 Glue and nail the cleats to the inside of the cabinet and doors flush with the back edge of the plywood panels where shown on the Exploded View and Side Section View drawings.

3 Measure the openings and cut the cabinet pegboard (L) and door pegboard (M) panels to size.

Cut the door panels and banding to size

1 Cut the two plywood door panels (N) to size from ½" plywood.

2 Cut the door banding pieces (O, P) to size plus 1" in length from maple stock.

3 Rout a 1/16" chamfer along the front mating edges of the door panel (N) and banding (O, P). When joined together in the next step, the chamfers form a decorative V-groove. (See the Single Door Cabinet Exploded View drawing *at right*.)

4 Miter-cut the banding pieces (O, P) to length. Glue and clamp them to the door panels (N).

5 Lay the cabinet, front side facing up, on your workbench. Position the doors, front side (or paneled side) up, on the cabinet with the edges and ends flush. To keep the hinges from binding later, lay a piece of folded writing paper between the cabinet and doors. The paper acts as a spacer to create the correct gap.

6 Use masking tape to secure the 1½×48" continuous (piano) hinges in place. Using the existing holes in the hinges as guides, drill 1/16" pilot holes into the cabinet and doors. Attach the hinges, and set the cabinet assembly upright, and open and close the doors to check the fit.

7 Locate and drill the holes, and attach a 3" wire pull to each door.

8 If locking the cabinet is a consideration, apply the barrel bolt, hasp, and hasp staple to the cabinet and doors.

Finishing touches

1 Remove the hardware from the the assembled cabinet. Sand all the parts smooth.

2 Apply a clear finish (we used satin polyurethane) to the door banding O and P; see the intro photo for reference.

3 After the finish dries, mask off the edging, and apply primer to the rest of the surfaces. Later, paint the primed surfaces.

4 Fit the pegboard panels (L, M) in their respective openings. Use panhead sheet metal screws to secure the pegboard panels to the cabinet and doors.

5 Reattach the doors to the cabinet. With a helper, hang the cabinet on the wall, being sure to hit all available studs. Reattach the pulls, barrel bolt, and hasp.

How to build a single-door cabinet

Using the Single-Door Cabinet Bill of Materials, Exploded View drawings, Cutting Diagram, and the same construction procedure as used on the double-door cabinet, build the single-door unit.

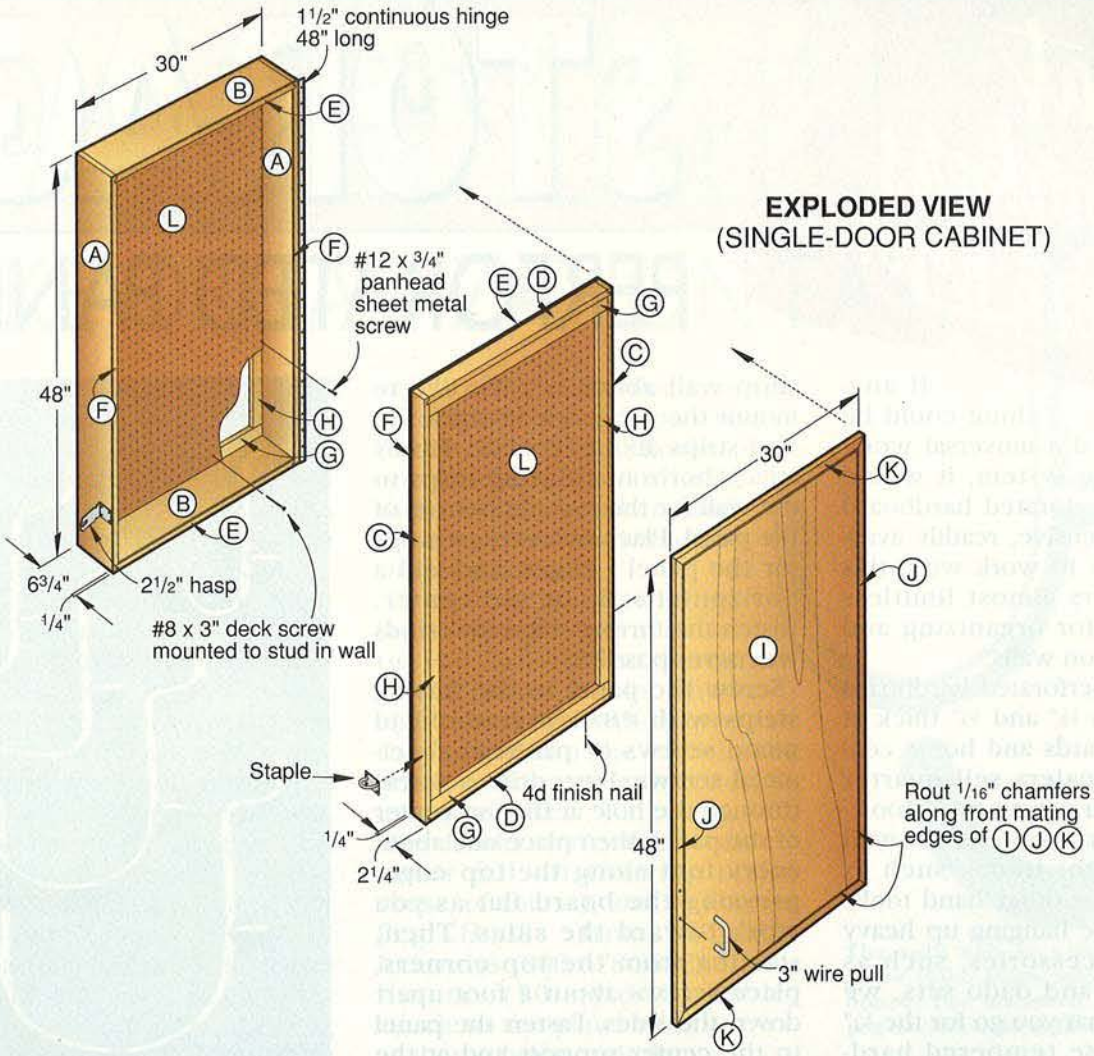
Bill of Materials

Part	Finished Size* T	W	L	Matl.	Qty.
SINGLE-DOOR CABINET					
A cab. sides	¾"	6¾"	48"	BP	2
B cab. top & bottom	¾"	6¾"	29¼"	BP	2
C dr. sides	¾"	2¼"	48"	BP	2
D dr. tops & bottoms	¾"	2¼"	29¼"	BP	2
E* cab. top & btm. edging	¼"	¾"	29¼"	M	4
F* cab. side edging	¼"	¾"	48"	M	4
G dr. top & btm. cleats	¾"	1½"	28½"	P	4
H dr. side cleats	¾"	1½"	43½"	P	4
I door panel	½"	28"	46"	BP	1
J* side bands	½"	1"	48"	M	2
K* top & btm. bands	½"	1"	30"	M	2
L dr. & cab pegboard	¼"	28½"	46½"	PB	2

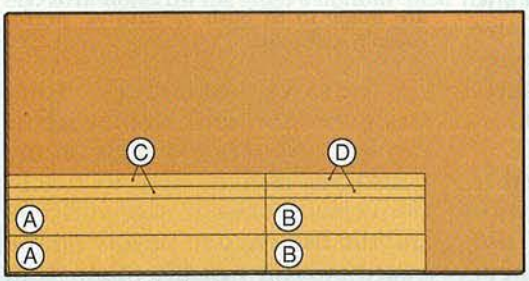
*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions

Materials Key: BP–birch plywood, P–pine, M–maple, PB–pegboard.

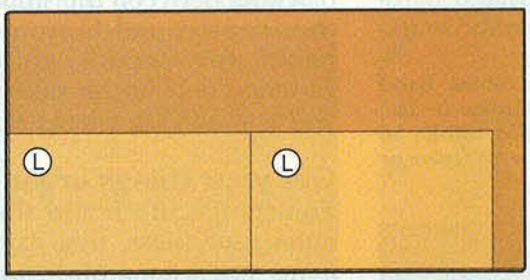
Supplies: 4d finish nails, 3" deck screws, #12×¾" panhead sheet metal screws, 1½×48" continuous (piano) hinge, 3" wire pull, 2½" hasp, lock, enamel paint, satin polyurethane.



EXPLODED VIEW
(SINGLE-DOOR CABINET)



¾ x 48 x 96" Birch plywood

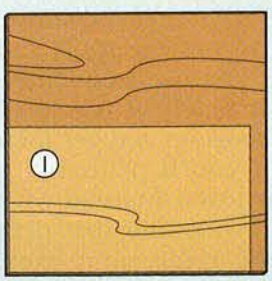


¼ x 48 x 96" Pegboard

¾ x 7¼ x 96" Pine

¾ x 3½ x 96" Maple

½ x 3½ x 96" Maple



CUTTING DIAGRAM
(SINGLE-DOOR CABINET)

What woodworkers need to know

STORAGE

PERFORATED PANELS

If anything could be called a universal workshop storage system, it would have to be perforated hardboard panels. Inexpensive, readily available, and easy to work with, this material offers almost limitless possibilities for organizing and hanging tools on walls.

You'll find perforated hardboard in 4×8' sheets ⅛" and ¼" thick at most lumberyards and home centers. Many dealers sell quarter panels or other precut sizes, too.

The ⅛"-thick board serves well for lightweight items, such as screwdrivers or other hand tools. But if you'll be hanging up heavy tools and accessories, such as power drills and dado sets, we recommend that you go for the ¼" board. Choose tempered hardboard for toughness.

Put up the panels

When you hang perforated hardboard, space it out from the workshop wall about ½". We like to mount the panels on ½"-thick furring strips about ¾" wide. Firmly attach horizontal furring strips to the wall for the top and bottom of the panel. Place two vertical strips for the panel's edges, and add a horizontal strip at the center. Fasten the furring strips into studs whenever possible.

Screw the panel to the furring strips with #8×1¼" roundhead wood screws or panhead sheetmetal screws. First, drive a screw through the hole at the top center of the panel, then place one about every foot along the top edge, pressing the board flat as you work toward the sides. Then, starting from the top corners, place screws about a foot apart down the sides. Fasten the panel to the center support and at the bottom edge in turn.

You can screw the panel right to open studs, too. If you do, install blocking between the studs at the top, center, and bottom of the panel for secure mounting. Fastened only at the sides, panels will bow and sag when loaded.

Some copper wire and a rubber band will secure standard hooks to the board. You also can hold hooks in place with a dab of silicone adhesive or hotmelt glue.

Get your things organized

To arrange the board for maximum usefulness, first gather the items you'll hang on it. Lay them out on the floor or on your workbench, organizing them for best space utilization and convenience.

Plan to put the tools and accessories you use frequently within easiest reach. If it's too hard to hang tools up and get them down again, you'll probably just lay them down instead of putting them away. And that defeats the purpose of this entire exercise.

You'll find both straight and curved hooks in several different sizes. Most are made to fit both ⅛" and ¼" perforated hardboard.

Handsaws, hammers, long straightedges, and similar items can hang from hooks high on the board yet remain easy to reach. Conversely, chisels, screwdrivers, and the like need to be low on the board so you can lift them from their holders. Just decide generally where you want to put items at this point—you don't need a detailed plan. After all, that's one of the advantages of using perforated hardboard and hooks—you can rearrange things on a whim.

Hang it all on hooks

Now, collect an assortment of hooks and fixtures, and start hang-

MADE SIMPLE

MAKE ORGANIZATION EASY

ing things up. You'll find standard pegboard hooks like the ones shown *below and left* at most hardware stores, lumberyards, and homecenters. Plastic bins and jars that hang on pegboard allow you to organize small parts and hardware easily. If you can't find them locally, one mail-order source is Leichtung Workshops (800/321-6840 for catalog).

An annoyance goes along with using perforated board and hooks. Sometimes, when you grab a tool from your neatly organized board, the hook comes off along with it. Hooks with locating tabs are less likely to pop off the board, but will still do so.

You can secure hooks to the board with retainers that clip over the hook and lock into adjoining holes. Look for them at hardware stores or in mail-order catalogs, such as Leichtung. (You also can bend #12 wire into S-hooks, place one on each side of a hook, then stretch a rubber band between them, shown *opposite page bottom.*)

Power Peg hooks, sold by Sears, offer another solution to the fall-out nuisance. These plastic hooks, shown *right*, feature a ball-shaped tab that snaps into the hole in the board, making them more likely to stay in place.

For hooks that will absolutely never fall off (barring major abuse, of course), look to Forever Peg Hooks from Windsor Industries (800/678-2552). These fixtures (50 styles available) attach to the panel with screws, as shown *below right.*

The split ball on a Power Peg hook, *above right,* snaps into the hole in the board. The standard hook's straight peg doesn't hold as firmly.

A panhead screw keeps the industrial-strength Forever Peg Hook fixture from popping off the board.

Fixtures like these hold items that won't hang readily from a hook. Install a shelf on your perforated panel using two or more of the long, braced hooks for brackets. Drill holes on the shelf's bottom near the front edge to fit over the hook end.

Photographs: Wm. Hopkins Photography
Illustration: Brian Jensen

WOOD magazine's IDEA SHOP 2

HOT CHOICES IN HEATERS

SAY GOODBYE TO WORKSHOP CHILLS

One of the first questions we asked ourselves while planning IDEA SHOP 2™ was "How should we heat it?" After doing plenty of research, we came up with a safe, efficient, and affordable system. Here, we'll tell you about the option we settled on, as well as what we found out about some other heating alternatives.

If you've done any woodworking in the cold, then you know that low temperatures can put a chill on your fun. Of course, you can dress for the cold, but all that extra clothing can be unsafe if it restricts your movement or comes near whirling blades, pulleys, belts, and such.

In this article, we'll explore some of the most practical options for heating a woodworking shop, such as gas furnaces and electric heaters. And although we don't recommend wood-burning stoves, we'll share with you the insights of a woodworker who wouldn't give up his stove for all of the oil in the Persian Gulf.

To get to the bottom of this issue, we consulted with experts in the heating field, sifted through stacks of fire codes, and drew on the experiences of our own staff members. We also spoke with woodworkers who use portable kerosene-, oil-, or propane-fired heaters (including "infrared" heaters) that vent burned gases directly into the shop environment. However, we advise against using these unvented appliances in an enclosed shop. Why? The exhaust fumes contain carbon monoxide and other combustion byproducts that can build to levels that are hazardous to your health.

Print this article

Note: *Although we have no objection to equipment-intensive or environmentally friendly systems such as heat pumps and solar-heating units, we won't cover them in this article. Instead, we'll concentrate on commonly available and affordable systems that make sense for most any geographical region.*

Gas furnaces: The way to go if your budget allows it

A new gas furnace will set you back at least several hundred bucks, but there's no heating source that matches the safety, effectiveness, or convenience of gas systems. However, you may be able save a good deal of money by picking up a used unit. Just be sure to have it inspected by a heating professional.

When selecting a gas-fired appliance, consider how you will keep the air in your shop from entering the furnace's combustion chamber. Why? Workshop air at times contains fine wood dust or volatile fumes from oil-based finishing and refinishing products that could ignite when exposed to a flame. In a garage shop, fumes from a leaking automobile gas tank or gas can also could ignite.

To achieve this separation of shop air and combustion air, you can either keep the furnace in an area sealed off from your shop, or buy a so-called "direct-vent" furnace with a sealed combustion chamber. Direct-vent units draw combustion air from the outdoors via a wall vent. To illustrate how these options compare, we'll take a look at two such systems in *WOOD®* magazine's original IDEA SHOP™ (described in the September 1992 issue) and IDEA SHOP 2™.

• IDEA SHOP 1: Keeping the furnace out of the shop

IDEA SHOP 1 is housed in a 14×28' insulated room partitioned from an uninsulated storage space under the same roof. In this case,

it made sense to locate a gas furnace in the uninsulated space, away from the dust and fumes of the shop. As you can see in the drawing *bottom*, a 4" pleated filter cleans the returning cold air.

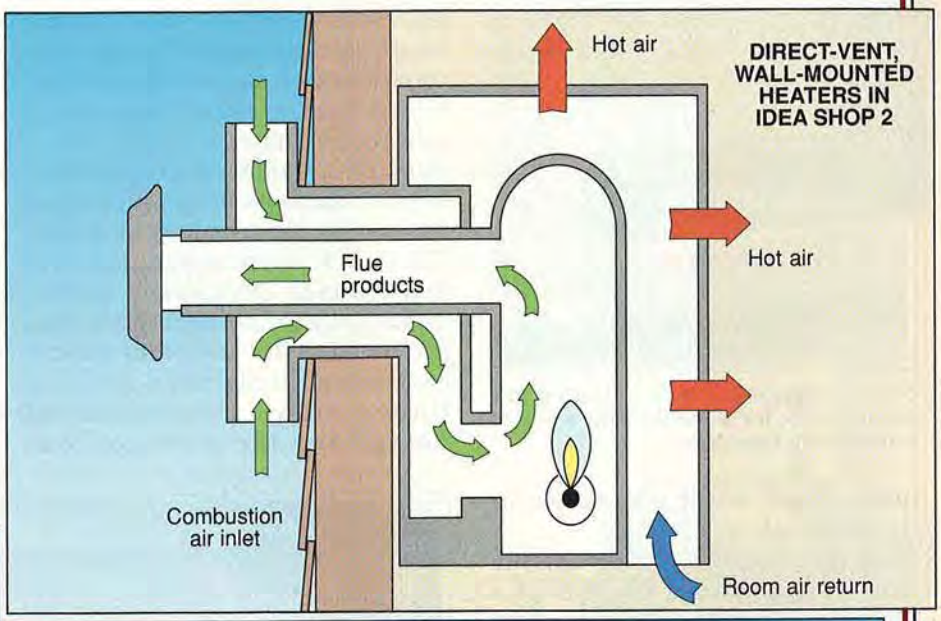
This forced-air system, although relatively expensive, has three key advantages. First, the workshop warms quickly because the two centrally located ceiling vents quickly distribute the heat. Second, the heating system takes up no valuable workshop space. And finally, the system has air-conditioning capacity for comfort during the hottest of months.

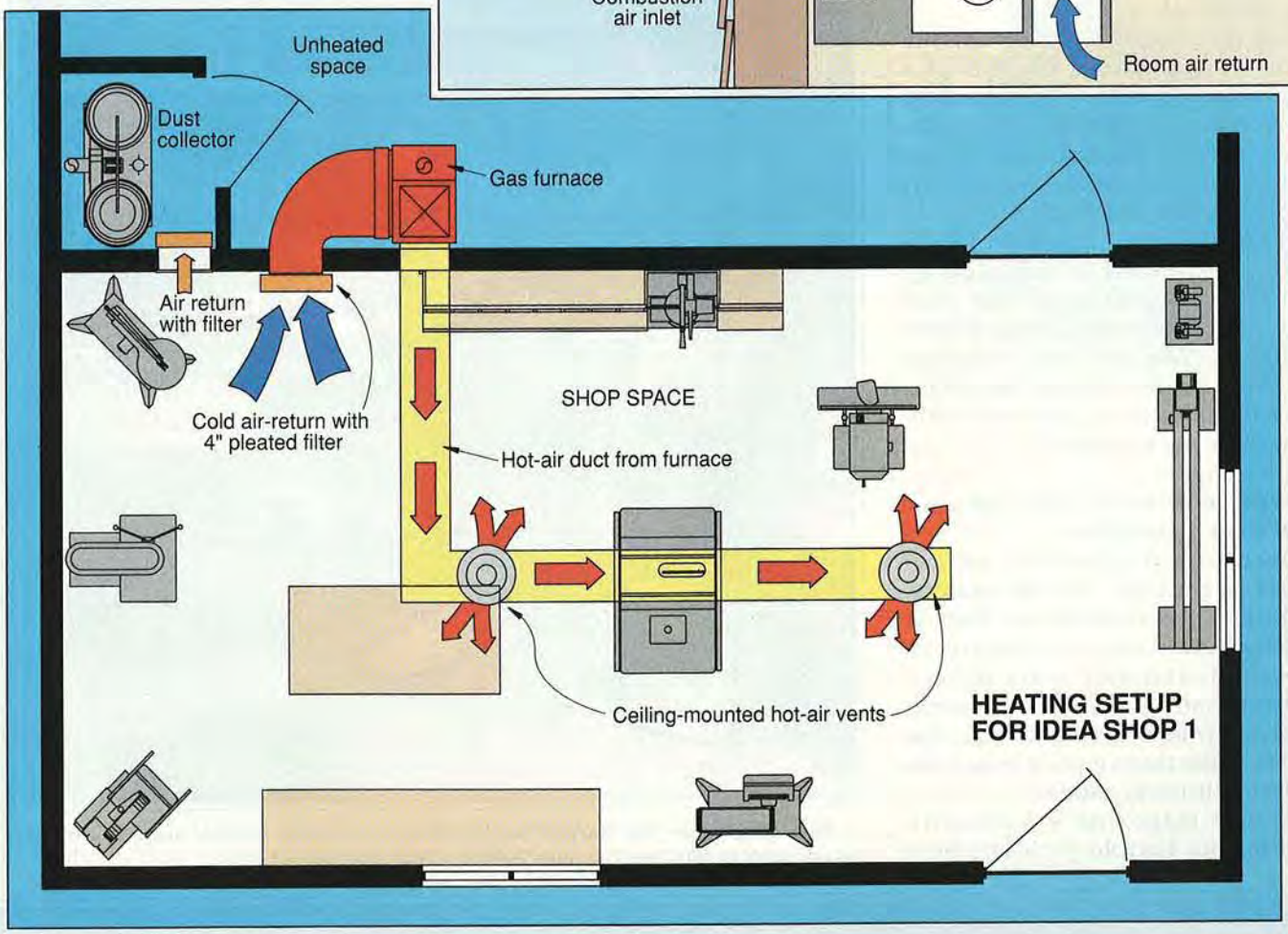
• IDEA SHOP 2: The advantages of direct-vent, wall-mounted heaters

If you need to place your heat source within the workshop, as we did with Idea Shop 2, here's your safest and most convenient option. As shown in the drawing *below*, a direct-vent gas heater mounts on a wall and uses outside air for combustion.

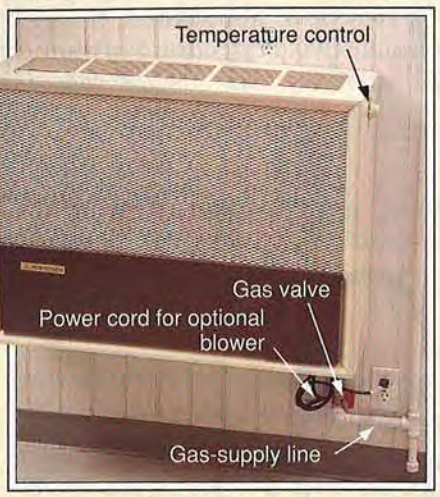
These units install quickly because you need only cut a single hole in the wall, place the vent through the hole, and hang the heater on the wall. With our gas-supply lines already in place, it took two of us about three hours to install two Perfection-Schwank

Continued





HOT CHOICES IN HEATERS



When choosing a wall-mounted gas heater, look for a model with a sealed combustion chamber.

heaters such as the one shown in the photo *above*.

The vent assembly, a key component of this system, consists of a tube inside a tube. The innermost tube channels exhaust air outside, and fresh air enters the combustion chamber through space surrounding the inner tube.

Although these units don't heat a space as quickly as a forced-air furnace, keep in mind that they produce heat even during power outages. (We included optional blowers on our heaters, but found that the units heat quite well without these accessories.)

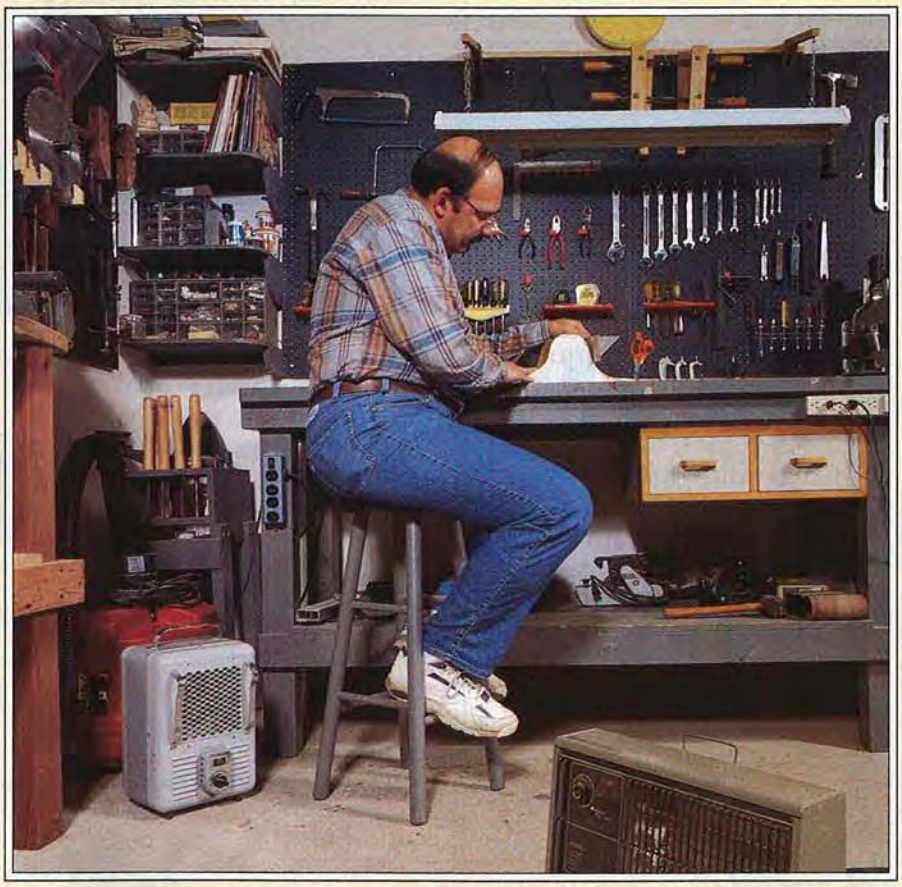
Electric heaters: OK for certain situations

There's no denying the advantages of portable electric heaters. You can buy them for as little as $20, there's no installation to speak of, and they don't pollute your shop environment. However, several major disadvantages make them a poor long-term option for most shops.

WOOD magazine's Managing Editor, Jim Harrold (working on a mantel clock in the photo *below),* has used electric heaters in his garage shop for several years. Now, he's anxious to convert to a gas furnace. As Jim says: "Even a small electric space heater consumes lots of electricity, and I've blown circuits more times than I care to remember."

Jim also has noticed a big jump in his electric bills in months when he has his electric heaters going. That's not surprising since, for most parts of the country, it costs more to generate heat with electricity than with any other source. (According to statistics from the United States Department of Energy and the American Gas Association, a conventional gas heater, with 78 percent efficiency, costs less than one-third as much to run as an electric heater.)

Nevertheless, portable electric heaters do make sense under certain conditions. If you have a small shop, or live in a warm climate, these appliances provide an economical means of taking the chill out of the air. Just remember to put them on a circuit separate from your tools and lights. As with gas furnaces, you must keep dust from accumulating on the surfaces of an electric heater. For safety's sake, Jim Harrold also unplugs his electric heaters after he's through working in his shop.



As Managing Editor Jim Harrold has discovered, portable electric heaters, although inexpensive to buy, provide little heat at a high operating cost.

What the fire codes have to say about shop heating

Although the standards put forth by the National Fire Protection Association (NFPA) don't apply to small-scale woodworking shops, we think it makes sense to pay attention to these guidelines when planning a home workshop, too. Here are some key points to consider:

- These standards prohibit the use of heating devices that employ an open flame. So, that rules out most wood-burning stoves, except for air-tight models that draw combustion air from the outside.
- The NFPA also spells out standards for collecting wood dust from surfaces and the air. Because of the flammability of wood dust, it makes sense to regularly clean it up, paying special attention to surfaces on and surrounding heating appliances. To control airborne dust, you should have an effective means of venting it outside in the summer and filtering it in the winter. You can use compressed air to clean hard-to-reach areas, provided you do it on a regular basis to prevent putting heavy concentrations of suspended dust into the air.
- When purchasing a heating system, keep in mind that the NFPA standards require that these appliances be listed by the American Gas Association or another recognized testing agency. The heating element or combusion chamber should be permanently guarded to prevent accidental contact by people, material, or equipment.
- In a garage workshop with automobiles, you should protect heating appliances from moving vehicles. That means either situating the heaters where they will not be struck, or placing sturdy steel posts (capable of stopping a rolling car) as protection around them.

What about wood-burning stoves?

Although fire codes discourage the use of most wood-burning stoves in woodworking shops, many woodworkers swear by this time-tested heating source. Since you may already have a woodburning stove, or plan to buy one, we'll share with you the experiences of Don Mostrom, *WOOD* magazine's correspondence writer and an avid log burner.

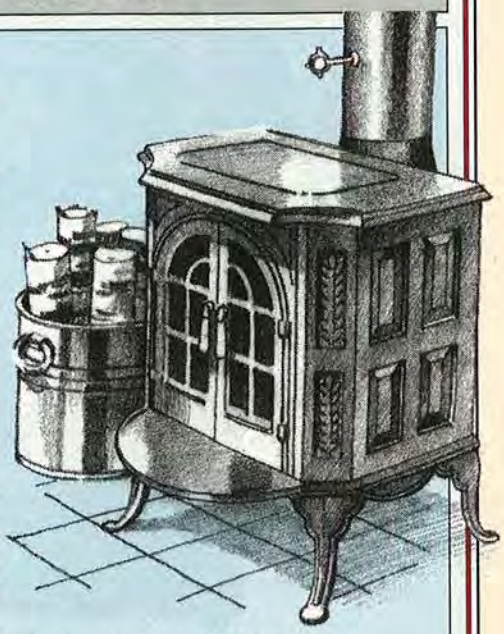
Like most owners of a wood-burning stove, Don likes the ambience of his stove, and the low cost of operating it (since he harvests his own wood). "I can still recall a frigid winter day a few years ago," Don told us, "I just got the stove cooking good, and the shop was nice and cozy. The only sounds in the air came from the crackling embers and the steady rasping of my handsaw as I cut some dovetails. It was utterly peaceful, and when I looked up, I saw that snow had started softly falling outside. On days like those, I forget all about the hustle and bustle of living in the 20th century."

Despite their charm, Don admits that woodstoves do have certain drawbacks. "Fueling a woodstove requires a lot of labor. You have to cut, stack, and chop the wood. Then, you have to put it into the stove and clean out the ashes from time to time. Also, there's no way to keep the fire going while you're out of town, so you have to either have a backup heating system, or remove anything from your shop that may freeze."

Although modern wood-burning stoves with catalytic combustors are much more efficient than older versions, they still dump a fair amount of pollution into the outside air. Remember, too, that new, good-quality woodstoves cost $500 to $2,000. And, some pollution-prone areas restrict their use altogether.

If you still have your heart set on a woodstove, Don offers this advice for your consideration:

- "Clean the dust regularly from the woodstove, and maintain at least 3' of clear area around it.
- "Never feed wood dust into the stove—you risk explosion.
- "Be certain your chimney or flue meets local building codes, and clean it regularly.
- "Restrict your finishing tasks to doing no more than a single furniture piece at one time, and do this away from the stove. If I were going to do a lot of lacquer spraying, I would get a spray booth.
- "Before you buy a woodstove, check with the carrier of your homeowner's insurance. A woodstove may affect your coverage or premium. Some insurance companies issue guidelines for safe use of a woodstove."



Written by Bill Krier
Illustrations: Kim Downing
Photographs: William M. Hopkins

LET'S TALK TOOLS

OUR PRODUCT SELECTIONS FOR IDEA SHOP 2™

We relied on Stanley for nearly all of our hand tools, especially items from the company's new Contractor Grade line. Power tools shown here in our mobile tool cart include the Hitachi D 10DF2 cordless drill, Black & Decker Quantum models BD1000 electric drill and BD6200 plunge router, and Bosch model 1290D ½-sheet finishing sander.

Besides good organization, a solid workbench, and effective systems for such things as heating and dust collection, a properly outfitted workshop needs quality tools. To help you out, here's a listing of the tools we handpicked for IDEA SHOP 2™.

We thought long and hard before making our selections, and based them on our own hands-on experience. Rather than simply choosing the best or most expensive models available, we picked tools that work well but don't cost an arm and a leg. In short, we would buy these tools for our own workshops.

Print this article

STATIONARY AND BENCHTOP MACHINERY

Bandsaw, jointer, and thickness planer:
Models 28-245 14" bandsaw, 37-190 6" jointer, and 22-540 12" portable planer
Delta
246 Alpha Drive
Pittsburgh, PA 15238
800/438-2486 or 412/963-2400

Belt/disc sander and bench grinder:
Skil models 3370 4x36" belt and 6" disc sander and 3396 6" bench grinder
S-B Power Tool Co.
4300 West Peterson Ave.
Chicago, IL 60646
312/286-7330

Compressor:
Model VT6196
Campbell Hausfeld
100 Production Drive
Harrison, OH 45030
800/543-8622

Drill press:
Model G1200
Grizzly
P.O. Box 2069
Bellingham, WA 98227
800/523-4777 (east of Mississippi)
800/541-5537 (west of Mississippi)

Lathe:
Model JWL-1236
Jet
P.O. Box 1349
Auburn, WA 98071-1349
800/274-6848
206/351-6000

Oscillating spindle sander and tablesaw:
Models OSS450 and BT3000
Ryobi
5201 Pearman Dairy Road
Anderson, SC 29625
800/525-2579

Radial-arm saw:
Sears Craftsman Model 19632
Call or visit your local Sears store.

Scrollsaw:
Model 1671
Dremel
4915 21st St.
Racine, WI 53406-9989
414/554-1390

PORTABLE POWER TOOLS

Air-powered tools:
Models DH6500 spray gun, MP2847 17-piece accessory kit including blow gun, tire gauge, and tire chuck, TL1016 straight-line sander, PL1501 ⅜" air ratchet, NBOO3000 brad nailer, SN258KOO finishing stapler, and PA2078 filter/regulator/lubricator
Campbell Hausfeld
100 Production Drive
Harrison, OH 45030
800/543-8622

Belt sander and fixed-base router:
Models DW431 and DW610
DeWalt
626 Hanover Pike
P.O. Box 158
Hampstead, MD 21074
800/433-9258

Circular saw:
Skil model 5657
S-B Power Tool Co.
4300 West Peterson Ave.
Chicago, IL 60646
312/286-7330

Cordless drill:
Model D 10DF2
Hitachi
3950 Steve Reynolds Blvd.
Norcross, GA 30093
404/925-1774

⅜" electric drill, heat gun, and 1¼-hp plunge router:
Quantum models BD1000, BD8300, and BD6200
Black & Decker
626 Hanover Pike
Hampstead, MD 21074
800/762-6672
410/239-5000

Hitachi model D 10DF2 9.6-volt cordless drill

Bosch model 3283DVS random-orbit sander

Finishing products from Minwax

Square-drive screws from McFeely's

Sears model 11602 ¼-sheet finishing sander

Sanding blocks and abrasives by 3M

Bostik lubricants

¼-sheet finishing sander:
Sears Craftsman Model 11602
Call or visit your local Sears store.

½-sheet finishing sander, jigsaw, and random-orbit sander:
Bosch models 1290D, B4200, and 3283 DVS
S-B Power Tool Co.
4300 West Peterson Ave.
Chicago, IL 60646
312/286-7330

Shop vacuum:
Quiet Super Power (QSP) model 900-84
Shop-Vac
2323 Reach Rd.
Williamsport, PA 17701-0307
717/326-0502

POWER-TOOL ACCESSORIES

Abrasive belts, sheets, and hand-sanding blocks:
3M
Consumer Relations, 3M DIY Division
3M Center, 515-3N-02
St. Paul, MN 55144
(phone number not available)

Bench dogs, dado shims, and snug-plug cutters:
Veritas Tools
12 East River St.
Ogdensburg, NY 13669
613/596-0350

Brad-point bits, Forstner bits, tapered countersink bits, router pad, and circle cutter:
Grizzly
P.O. Box 2069
Bellingham, WA 98227
800/523-4777 (east of Mississippi)
800/541-5537 (west of Mississippi)

Bullet brand twist drill bits:
Black & Decker
626 Hanover Pike
Hampstead, MD 21074
800/762-6672
410/239-5000

Dado-blade set, router bits, and sawblades:
Freud
P.O. Box 7187
High Point, NC 27264
910/434-8300

Dust-collection system:
Sears whole-shop dust-collection system, no. 29964
Call or visit your local Sears store.

Mobile bases for jointer and bandsaw:
HTC Products
P.O. Box 839
Royal Oak, MI 48068
800/624-2027
810/399-6180

Skil model 5657 portable circular saw by S-B Tool Co.

De Walt model DW431 portable belt sander

Sears Craftsman wrench sets

Snips, hex-key sets, and Vise-Grip locking pliers by American Tool Co.

Stanley stapler

Various drill bits from Grizzly

Compass and trammel points from McFeely's

Continued on page 93

WOOD® MAGAZINE'S LOOKING OLD

In the 10 years since WOOD magazine emerged on the woodworking scene, I've had the pleasure of meeting and writing about some swell woodworking craftsmen and women. Many of them have become good friends, even though I seldom see them. But from time to time I think about all the people I've met. So for this anniversary issue, I thought I'd check in by telephone with some of those people from the past, just to see what they have been up to.

Peter J. Stephano

—Peter J. Stephano, Sr. Editor

STEVE BALDWIN, TOYMAKER

Issue 2, Nov./Dec. 1984

"Who's going to pay $130 for one of these toys until they understand it? That becomes my job. I'm selling them one at a time over 30 years, rather than 3,000 every year. I'm building a following."

CRAFTSMAN CLOSE-UP

heirloom toys

crafted collectors' items from the basement toy company of Steve Baldwin

Ten years ago, Steve was running his Baldwin Toy Company out of a basement shop in his Omaha home. He would spend hours there when he was free from his high school counseling duties. Then, he'd sell his work at a few art fairs around the Midwest. Today, a lot has changed, but some things remain the same.

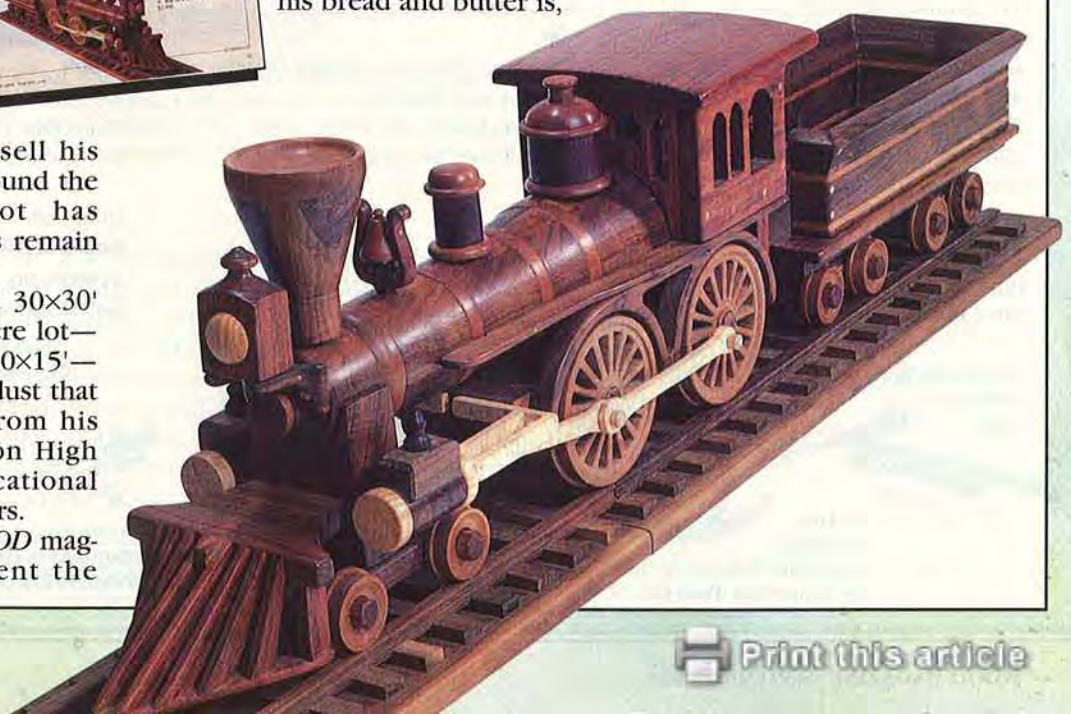
"I now have a detached 30×30' shop building on a two-acre lot—my basement shop was 10×15'—and can make all the sawdust that I want to," said Steve from his office at Omaha's Ralston High School. He's been a vocational counselor there for 25 years.

"I remember when a *WOOD* magazine staff member spent the weekend photographing my work and interviewing me for that early issue. I can say that I still use that article regularly to showcase my work. And yes, I'm still making the wooden toys, but I have a full-blown catalog now, with prices."

Steve mentioned that he had recently launched a plan business, too, and got over 1,000 responses from his first advertisement. "I was surprised by the demand for the plans of the more complicated, hard-to-build models," Steve noted. "Surprisingly, a lot of them came from Canada."

The veteran toymaker hasn't forgotten where his bread and butter is, though. "I still produce the Collector's Series of signed and numbered vehicles that I did then. But when that article appeared, I had only made about 100 of the Model A with the rumble seat. Now we're over 900. The series itself has grown to about 30 different models. The General, the train shown in the article (see photo *below*), well, I've sold 26 of those, starting at $3,000."

So what else has happened? "My wife and I now do seven to 10 major shows a year," Steve explained. "That's our main form of marketing. Of course, a lot of our business is return sales, because I haven't let up on the quality."



Print this article

FAMILY REUNION
UP A FEW FRIENDS

JUDY GALE ROBERTS, INTARSIA ARTIST

Issue 24, AUGUST 1988

"I choose red cedar for my intarsia because of its varying color and because it doesn't deteriorate. One hundred years from now, a person could sand and refinish one of my pieces and the wood will look as warm and colorful as it does today."

"In 1988 we relied primarily on art fairs, and a few commissions, to sell my intarsia," Judy replied to the question about how life had changed. "But when we got 5,000 pattern requests from that article in *WOOD*, our little Lufkin, Texas, operation turned *more* into a business. We realized that there really was a market for the patterns that I design. So, we bought a computer to track the names, then started a newsletter. Now, all of my work involves the designing of patterns for intarsia and scrollsawing."

According to Judy and husband Jerry, their pattern customers write to their Texas headquarters from all over the U.S., as well as Australia, Aruba, New Zealand, England, Germany, the Bahamas, Mexico, Hawaii, Japan, and Brazil. Creating 18 new intarsia patterns per year, and three books of scrollsaw patterns with 35 new ones in each, limits Judy's shop time. "I know when to say 'Uncle' if I run out of ideas," said Judy, "but instead, we keep coming up with new ones. We run out of time more often than ideas—I guess because this business is so exciting. About the only time I go into the shop now is to do the models for the patterns. Yet, when I do spend time there, it's a lot more enjoyable."

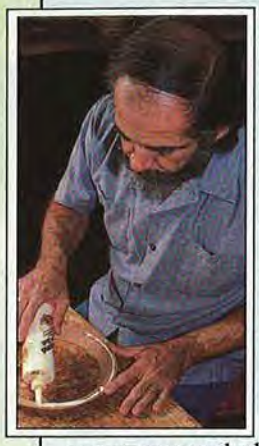
What about the old days? "I do miss the art fairs and the camaraderie between the artists," admitted Judy, "but not the packing and unpacking. I guess back then I was hoping to become a famous intarsia artist. Now, we're just aiming at the same goal from a different direction. At some point, I'd just like to go back in the shop and create the art—and not worry about selling it. That's every artist's dream."

Continued

ROBERT ST. PIERRE, WOOD SCULPTOR

Issue 5, JUNE 1985

"The exciting part of my work is going from one piece or project to another, learning from each. You develop a feel for the wood, a knowledge of how it behaves. Each reacts differently to laminating, sanding, and the finishing."



"A lot has happened in those years, but that article in the magazine was probably the most central thing concerning the success of my work. I have gotten so much feedback from it. It was the exposure, whether the readers were woodworkers or not. And the magazine seems to never die—I still get response," Bob told me from his new home in the Tusquitee Mountains near Hayesville, North Carolina. He and his wife Mary moved there in July 1993 to get away from the hustle, bustle, and cost of Boston.

"Living here is like being in a bank vault, but instead of gold bars all around, I have trees! And that's new to me," Bob exclaimed. He has always appreciated the varying colors and grain of wood. And he integrates its unique visual qualities into his work that's made up of rings cut with a jigsaw, which he laminates into bowls and other vessels or glues into sculptures. Like a kid in a candy store, he's now overwhelmed by the stock on the stump that circles him."We're surrounded by forests. For $50 I can buy a walnut tree 30" in diameter at the base and tall enough to get three 8' logs!"

WORKING THE UNBROKEN RING

On his acreage, Bob has a new 60x80' shop, with a view. "Through the windows, I see the sun coming over the mountains, and watch wild turkeys and eagles," he said. "I was looking for a place where it was easier to live, because with my work, I can live anywhere. And I found exactly the right place."

And what is Bob's work like these days? "Over the long run, my work has changed dramatically, although the technique remains the same," he explained. Bob's creations also have spread from New England to around the

Perhaps you'd like to turn your woodworking into a successful career just like our featured professionals did? If so, their stories require some "reading between the lines." Such as:

- *Select some good designs, perfect them, and make them the bread-and-butter basis of your work. Steve Baldwin has done that with his Collector's Series.*
- *Build on success by adding products that tap new markets, just as Robert St. Pierre has done with his expanded line of vessels.*
- *Take advantage of new opportunities with your talent. Judy Gail Roberts achieved more fame and fortune with designs than actual woodworking.*
- *Build a solid reputation. Had not Desiree Hajney tested her abilities through carving competitions, she might not be one of the nation's foremost wildlife carvers.*

A WOOD® MAGAZINE

Until this issue, Chuck Heiken, an antique furniture restorer, has never appeared on these pages. But his is a great story, nontheless.

For 23 years, Chuck was in data processing at a large Des Moines-based insurance company. But in 1992 things were changing, and he felt uncomfortable.

"I was getting burned out. My responsibilities were getting further and further removed from

globe, with pieces in 34 countries, including the U.S. embassies in Honduras and South Africa. As Bob sees it, he reached some marketing milestones, too.

"Most of my sales come from three big wholesale shows a year," he noted. "In fact, from the last show a buyer from the chain of Liz Claiborne shops called me to order some display pieces for the stores. Awhile back, I developed a line of wooden cremation urns with screw-on lids that are marketed to funeral directors across the nation. Of course, I still do commission work with my sculptures and vessels—I've had one for an 8'-tall vessel that paid $12,000. Then, I do a line of floral bowls and vases with glass liners intended to hold fresh-cut flowers."

And what has Bob learned in the last decade? "I've found out that anything is possible. If you believe in something, and want to work hard, success will be there, it will come" he said. "But enjoy what you do, too, and have fun doing it. You can't, though, become successful by only working 8-5. My typical day is 8 a.m. to 10 p.m., seven days a week, and it's been like that since 1984. Still, I love wood, I love form, and I have a great time."

DESIREE HAJNEY, WILDLIFE CARVER

Issue 29, JUNE 1989

"Carving never gets old. One reason is all the things I still want to carve. Another is that I challenge myself. For some reason, a woman gets critiqued more than a man, so I'm more careful with details."

Over forty issues of *WOOD* magazine have been published since we introduced Desiree Hajny. She, husband Bernie, and son Jeff lived in Columbus, Nebraska, then. Today, they make their home in Wichita, Kansas. But more than her location has changed.

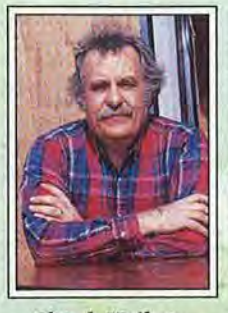
"More doors have opened here, and so many carvers come through town—I've just learned so much," Desiree bubbled. "I just finished a book on carving, we issued a video, and I'm a regular contributor to an English carving magazine! Now, a really big thing has happened: A company called Conversation Concepts has bought six of my designs for reproduction. They make them and then sell them to gift shops around the world! The pieces will be signed and have a little brochure with them about me and my work."

Desiree, who has been carving and regularly accumulating blue ribbons from national and international carving competitions since 1985, places more career emphasis on teaching now. "I've slowed down around the show circuit," she said. "But I will be teaching at least a dozen seminars across the U.S. this year. And I have bookings for 1995." Not surprising. Desiree's instructions for carving Roscoe the Raccoon in the issue that interviewed her prompted readers to order over 2,000 carving blanks of the figure so that they could have one, too!

So what is different today? "I'm doing better than I expected. But for a long time I didn't know what to expect—we just went with the flow. These days, Bernie and I are planning two years ahead, and in the near future he'll quit his teaching job to work with me full-time. Our son Jeff has even taken an interest in art. How much better can it get.

READER TAKES THE PLUNGE

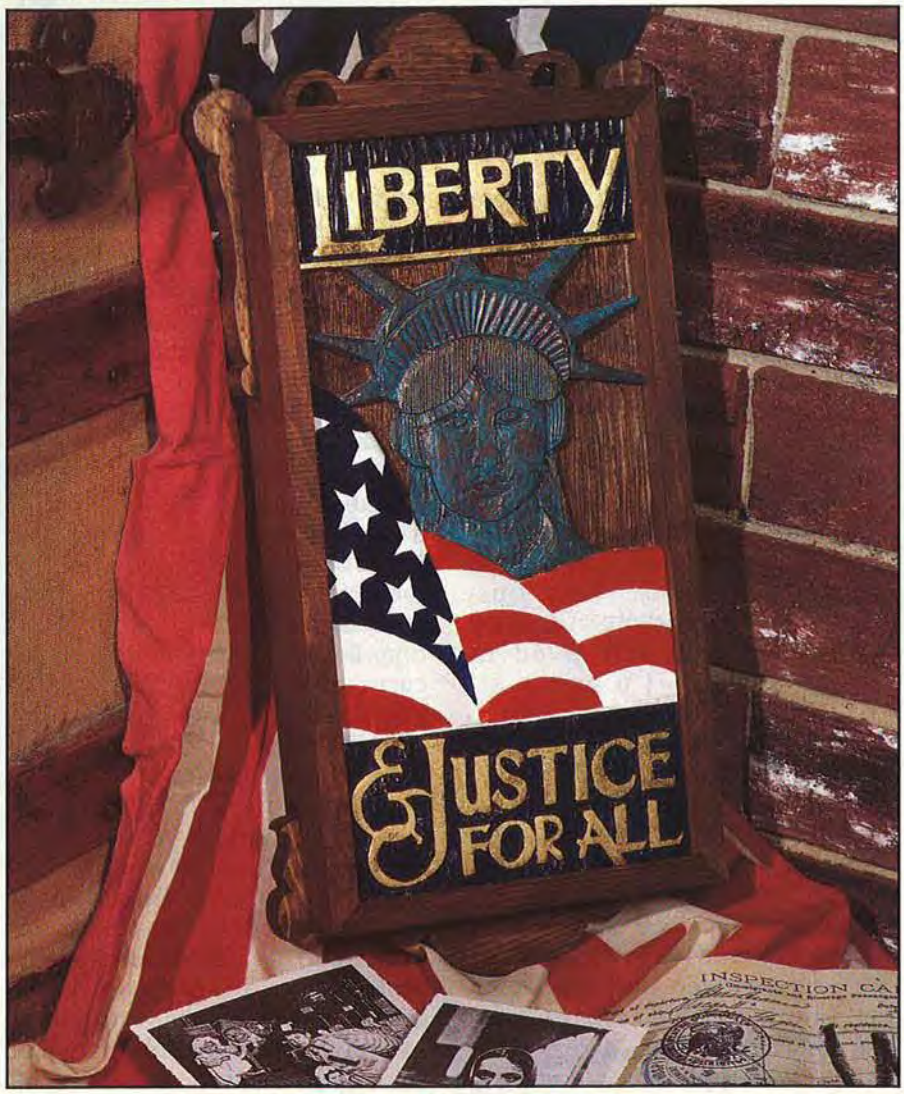
the technical, and I needed something different," says Chuck. "I spent about a year looking for something else. Then I read the article about the wood-finishing program at Dakota County Technical College ("*WOOD*® Magazine Goes To Finishing School," Issue 49, January 1992), and my wife Sharyl and I went there for a visit. I liked what I saw there and decided to attend."



Chuck Heiken, furniture restorer

Chuck enrolled in the 10½-month program and graduated. In October 1993, he bought an exisiting refinishing business with savings. "The school was very realistic when it came to what we could expect in the world. Because I had done woodworking as a hobby, I had more or less decided on antique restoration before I went there, and placed my emphasis on that. Right now, as Heritage Restorations, I'm located in an antique-oriented business area here in Valley Junction [West Des Moines, Iowa] and keeping myself and my helper, Chad, very busy. And I'm happy again."♣

Photographs: David Jordan, Jim Elder, Bob Hawks, Hopkins Associates, Peter J. Stephano



Miss LIBERTY

The Statue of Liberty, our flag, and what they stand for—it's all in this spectacular design from Maryland woodcarver Robert Thomas. And, once you start carving, you'll pledge allegiance to the straightforward techniques used to make this impressive relief plaque.

Print this article

Glossary:

Grounding: *Removing wood to establish the relief levels before detailing a carving.* Start with the deepest relief area in the design when grounding.

Stop cut: *An incision along a pattern line.* A stop cut enables you to carve toward that line using a knife or gouge without chipping out wood beyond the line. This way, you can establish sharp edges and separations in your carving.

Sweep: *The side-to-side curvature of a gouge, designated by a number from 1 to 11.* The degree of curvature increases with higher numbers. No. 1 denotes a straight blade; no. 9,

Draw a pencil line across the front surface of a 1×5¾×12" basswood carving block, 2" from the top end. Lay a photocopy of the full-sized Miss Liberty pattern *opposite page* on the wood, placing the top of the pattern on the pencil line. Tape the pattern to the wood at the top, and slide a piece of transfer paper under it. Then, trace the pattern onto the wood.

After removing the paper copy, spray the patterned stock with clear lacquer or artist's fixative. This makes the pattern lines easier to see and harder to rub off as you work.

We used these tools and supplies

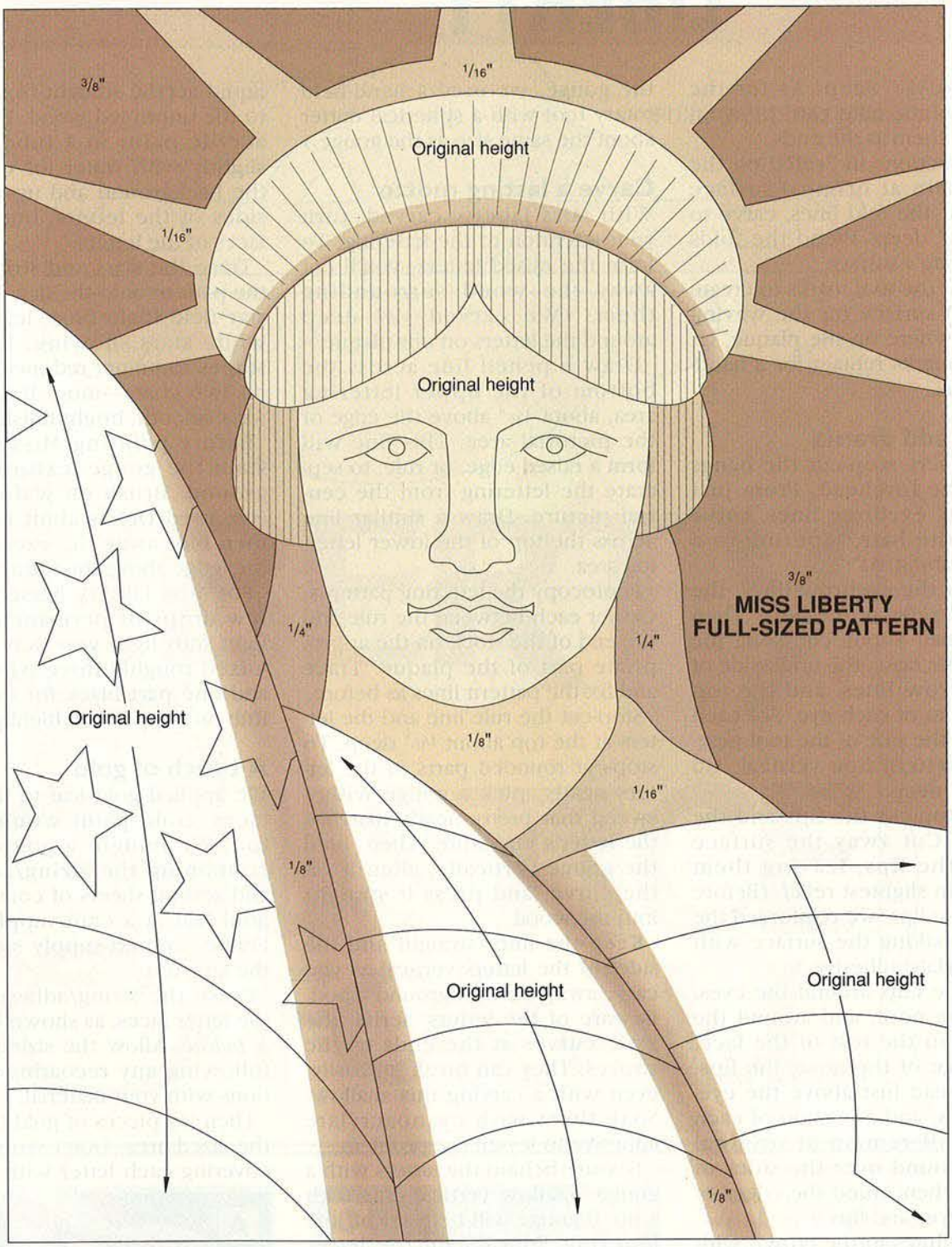
Stock:
1×5¾"×12" basswood, ¼"×2×48" pine for frame sides and ends, miscellaneous ¾" pine for frame ornaments.

Gouges:

No.1 Skew 5/16" | No.5 1/8" 5/16" | No.7 3/8" | No.9 1/4" | No.11 U-veiner 1/16", 3/16" | No. 12 V-tool 1/16", 3/16"

Bench knife

Finishing supplies:
Acrylic artist's colors: Titanium white, cadmium red medium, phthalocyanine blue, permanent green light, Mars black.
Walnut wood stain, gold-leaf kit



Model Miss Liberty

Stop-cut the pattern lines adjoining the orange-tinted background. This lowest relief level extends to the edge on each side. Start with stop cuts about 1/16–1/8" deep.

Begin cutting away the waste with a no. 5 or no. 7 gouge, about 5/16" wide. A bent gouge comes in handy for the tight areas between the crown points at the top and between the head and flag on the side. You also could use power-carving equipment in those spots.

Stop-cut the lines again, and carve deeper. Continue stop-cutting and removing waste wood until you reach a depth of 3/8". Keep the sides of the cuts vertical as you ground the plaque.

Next, stop-cut the pattern lines along the 1/4"-deep levels. Alternately stop-cut and remove material with the no. 5 and no. 7 gouges. On the open side, you can use the tip of your knife.

Similarly, ground the remaining levels. Leave the face and bangs at original-surface height. Note that the crown slopes from original

height to 1/16" deep. As for the crown points, take care to avoid chipping them at the ends.

Three sections indicated on the flag remain at original-surface height. At the fold lines, carve to about 1/16" deep. Blend the folds into the flag's surface.

Sand out the tool marks to create a smooth surface for the waving flag. Elsewhere on the plaque, let the tool marks remain for a hand-hewn look.

Details add drama

On the face, stop-cut the bangs across the forehead. From just above the eyebrow lines, carve toward the hair, tapering to a depth of about 1/32".

Stop-cut the eyebrow lines, the eyes, and sides of the nose. Then with a small V-tool, cut along the sides of the nose, the underside of the eyebrow lines, and the top and bottom of each eye. For each cut, hold the side of the tool nearest the pattern line vertical. Go about 1/16" deep.

Next, stop-cut the lips and the nostrils. Cut away the surface around the lips, leaving them standing in slightest relief. (Before carving the lips, we reinforced the area by soaking the surface with cyanoacrylate adhesive.)

Blend the cuts around the eyes, beside the nose, and around the mouth into the rest of the face. The bridge of the nose, the lips, the forehead just above the eyebrow lines, and a portion of each cheek will remain at original height. Round over the sides of the face, then round the edges of the oval eyes and lips.

Cut the flutes in the crown with a 1/8" no. 11 U-veiner. Chamfer the edges of the crown points. Then, with a 1/16" V-tool, carve shallow vertical lines on the hair.

Texture the deepest relief layer with gouge cuts. First, groove the areas with a 1/4" no. 7 or no. 9 gouge. Then, make random vertical cuts with a 1/16" U-veiner. (In the areas we couldn't reach with the gouge, we used a hand-held rotary tool with a spherical cutter about the same size as the gouge.)

Carve a lasting motto

With Miss Liberty carved, turn your attention to the lettering. To form the raised letters, you'll cut away the wood surrounding them. (We carved 1/16" deep around the letters on our plaque.)

Draw a pencil line across the bottom of the upper lettering area, about 1/16" above the edge of the pictorial area. This line will form a raised edge, or rule, to separate the lettering from the central picture. Draw a similar line across the top of the lower lettering area.

Photocopy the lettering patterns. Center each between the rule and the end of the stock on the appropriate part of the plaque. Trace and fix the pattern lines as before.

Stop-cut the rule line and the letters at the top about 1/16" deep. To stop-cut rounded parts of the letters neatly, pick a gouge with a sweep that pretty nearly matches the letter's curvature. Then, hold the gouge vertically, align it on the curve, and press it straight into the wood.

Keep the lines straight and the sides of the letters vertical as you carve away the background wood. Beware of the letters' serifs, the little curves at the ends of the strokes. They can break off easily, even with a carving this shallow. Soak them with cyanoacrylate adhesive to lessen the problem.

Texture behind the letters with a gouge. Shallow vertical cuts with a no. 9 gouge will help set off the lettering. Block-sand the letter faces and the rules.

Now, show your colors

Paint the plaque with acrylic artist's colors. Start with a primer coat of white for Miss Liberty and the flag.

Paint the textured areas behind the lettering phthalocyanine blue (known as thalo blue). Apply the liquid acrylic straight from the jar to the unprimed wood. If you use acrylic paint in a tube, thin it slightly with water for use. Paint the background and up onto the sides of the letters, but not the faces of the letters.

Trace the stars and stripes from the pattern onto the flag. Paint the star field thalo blue, leaving the white stars showing. Paint the stripes cadmium red medium. Put on two coats—more if needed—for a smooth, bright finish.

Before painting Miss Liberty, stain the gouge-textured background. Brush on walnut stain (we used Deft walnut no. 400), then blot away the excess. Stain the ledge above the statue's head.

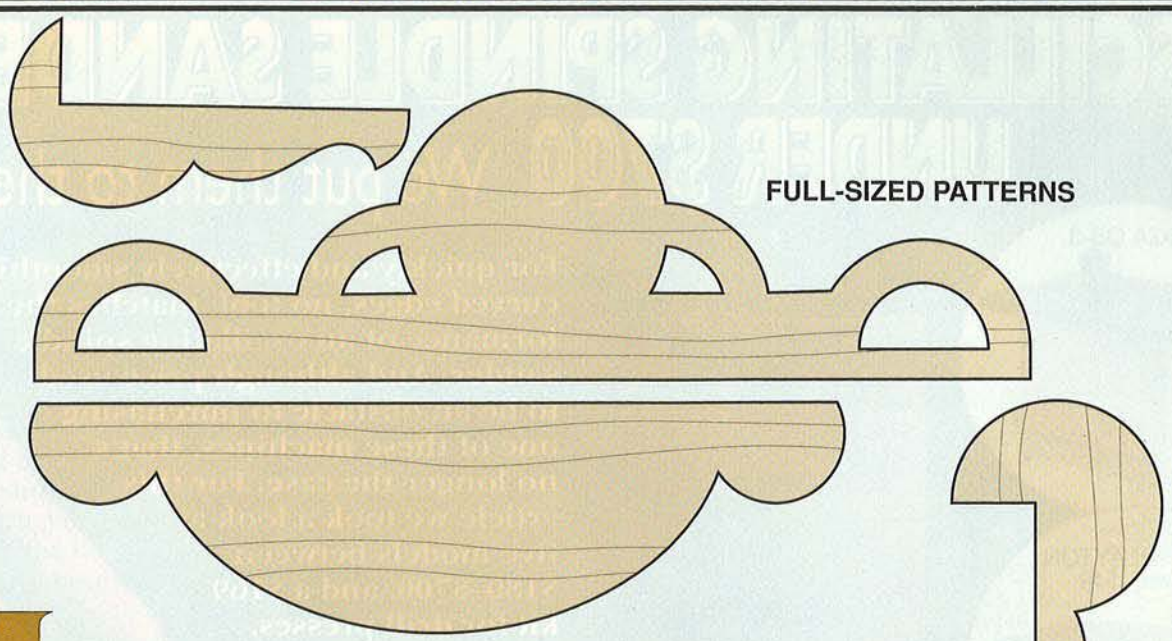
For Miss Liberty herself, mix a few drops of permanent green light into light gray acrylic. (We mixed roughly three parts white and one part black for the gray.) Rub on coppertone highlights.

A touch of gold

We applied gold leaf to the letter faces. Gold paint would work, too. We bought a gold leaf kit containing the sizing/adhesive and several sheets of composition gold leaf at a craft-supply store. Frame and art-supply stores sell the kits, too.

Brush the sizing/adhesive onto the letter faces, as shown in Photo A *below*. Allow the sizing to dry, following any recoating instructions with your material.

Then lay pieces of gold leaf onto the sized area. Don't worry about covering each letter with a single



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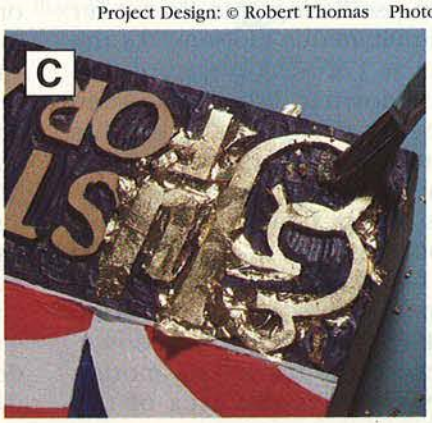

piece; overlapping edges and wrinkles won't even be visible after you rub the leaf.

Rub the leaf smooth with your finger or a piece of soft cloth, as shown in Photo B. Whisk away the unadhered leaf with a small, stiff brush, as shown in Photo C. You can salvage some of the excess by lifting it with the tip of your carving knife. Apply a protective coating over the letters.

Continued on page 102

OSCILLATING SPINDLE SANDERS UNDER $700 We put them to the test

For quickly and effectively smoothing curved edges, no tool matches the performance of an oscillating spindle sander. And although price used to be an obstacle to purchasing one of these machines, that's no longer the case. For this article we took a look at five models between $180–$700, and a $169 kit for drill presses. Here's what we discovered.

Six good reasons to buy an oscillating spindle sander

To truly appreciate the qualities of an oscillating spindle sander, you need to log some time using one. You'll be amazed at how fast and effortlessly you can smooth curved edges on woods as hard as oak and ash.

Unlike a drill-press sanding drum, the drum of an oscillating spindle sander has two simultaneous motions. As the drum spins at 1720–2000 rpm, it also goes up and down a distance between 13/16–1½" every second or two. This stroking motion makes for a huge improvement in performance over a drill-press setup. These advantages became apparent early in our testing:

1 *Speed.* Oscillating spindle sanders cut much more aggresively than a drum sander that's not moving up and down. That's because the oscillating motion constantly changes the area of the drum that's in contact with the workpiece edge. The stroking action also combats the tendency of the abrasive to load up with sanding debris.

2 *Less burning.* Since the drums don't load up quickly, you get less burning and glazing on sanded edges. You'll especially appreciate this attribute if you work with black cherry or maple.

3 *Less effort.* Because an oscillating sander cuts more aggressively, you don't need to apply as much force against the sanding drum. In turn, you have more control over stock removal. With less force against the drum, you also get an edge that's more square to the face of the workpiece. Why? A sanding drum may flex backward or contort under pressure.

4 *No scoring.* A sanding drum that doesn't move up and down will leave distinct scoring marks from its abrasive

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grains. With an oscillating drum, these grains don't rotate in the same plane so they leave a random pattern that's less visible to the eye.

5 *Portability.* If you're in a pinch for space, here's some good news. Some of today's oscillating spindle sanders can be stowed under a bench, or in some other out-of-the-way location. The Oscillating Sander Kit by GP Designs takes up no workshop space because it mounts on your existing drill press. (See the box on the *following page* for more information on this product.)

6 *Dust collection.* Any type of drum sander makes lots of superfine dust. Fortunately, most of the oscillating spindle sanders on today's market have built-in dust collection. To find out how well the individual machines performed in this respect, see the section "Dust collection: These models cleaned up on the competition" on *page 81.*

An inside look at oscillating spindle sanders

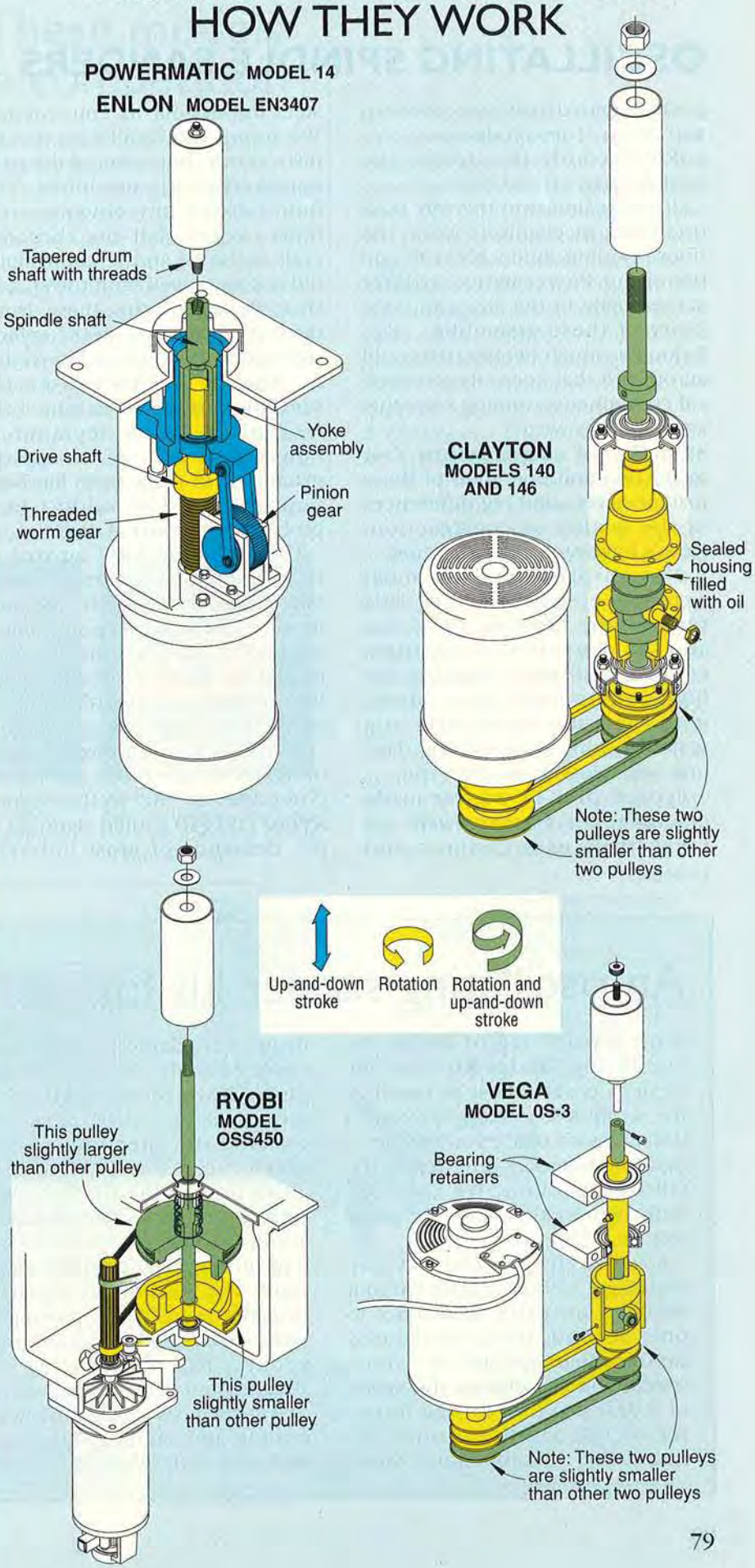
After giving the tested machines a thorough tryout, we disassembled each of them to determine two things: 1) how they work; and 2) quality of construction.

• How they work. As you can see in the drawings *right,* three of the tested models—made by Clayton, Ryobi, and Vega—operate on a similar principle. These machines have two pulleys at the base of the spindle shaft. One of the pulleys—the one that drives the spindle shaft—makes fewer revolutions per minute (rpm) than the other pulley. This difference of 30-58 rpm (depending on the machine) forces the spindle up and down an equal number of times per minute because of a built-in circular ramp.

The Powermatic and Enlon models have mechanisms altogether different from the Clayton, Ryobi, and Vega. Here, the drive shaft has a threaded worm gear that rotates a pinion gear. In turn, the

Continued

4 OSCILLATING MECHANISMS: HOW THEY WORK


POWERMATIC MODEL 14
ENLON MODEL EN3407
Tapered drum shaft with threads
Spindle shaft
Yoke assembly
Drive shaft
Pinion gear
Threaded worm gear
CLAYTON MODELS 140 AND 146
Sealed housing filled with oil
Note: These two pulleys are slightly smaller than other two pulleys
Up-and-down stroke
Rotation
Rotation and up-and-down stroke
RYOBI MODEL OSS450
This pulley slightly larger than other pulley
This pulley slightly smaller than other pulley
VEGA MODEL 0S-3
Bearing retainers
Note: These two pulleys are slightly smaller than other two pulleys

pinion gear drives two rods up and down. These rods attach to a yoke assembly that forces the spindle shaft up and down.

Although similar in the way their oscillating mechanisms work, the floor-standing Enlon EN3407 and benchtop Powermatic 14 differ substantially in the size and durability of these assemblies. The Enlon has much beefier parts, and an oil bath that keeps its mechanical components running smoothly and with less wear.

• **Quality of construction.** Our inspection and operation of these machines revealed big differences in the quality of construction. Here's how each machine fared.

Not surprisingly, the most expensive machine in this review—the ***Clayton 146***—was also the most sturdily constructed. The oscillating assembly has high-quality parts throughout, with the ramp mechanism in a sealed housing filled with oil. This unit will stand up to heavy use.

Typical of a Taiwanese-made machine, the ***Powermatic 14*** extensively uses cast-iron and steel throughout its construction. We found the oscillating mechanism sturdy, but some of the parts appeared poorly machined. This didn't create any obvious problems except that the threaded ends of the ¼" and ½" drum shafts did not mate well with the spindle shaft. Because of this, these drums did not center well on the spindle shaft (a problem often referred to as "runout"). This caused the sanding surface to hammer the workpiece. Mark Seymour of Powermatic assured us that the machining of these parts has been improved and shouldn't be a problem with current models.

The ***Enlon EN3407*** amazed us by not only its shear mass (about 300 pounds) but also by the quality of its mostly cast-iron components. We expected this machine to just be a larger version of the Powermatic 14, but it shares none of the Powermatic's weak points.

Although it's composed largely of lighter-weight metal and plastic components, the well-designed ***Ryobi OSS450*** should stand up to the demands of most hobbyist woodworkers. The weakest point of this machine is its noisy universal motor. Typically, universal motors do not last as long in continuous-duty applications as the induction-type motors found on the other tested machines.

The ***Vega OS-3*** proved to have the most disappointing construction of the units we tested. Although simple and easy to repair, the machine appears crudely made. Our model arrived with rusty pulleys; the ramp mechanism is encased in a piece of Schedule 40 PVC pipe like the type you would pick up at a corner hardware store. In operation, the entire spindle fell out of the machine when both spindle bearings loosened from their plastic retainers as we pressed a 2" sanding sleeve onto its drum. We tightened the retainers as much as possible, but the same problem persisted.

Four things to consider when comparing tables

To achieve quality results with 99 percent of your work, the table

An oscillating sander kit for your drill press

With a price tag of $169, the Oscillating Sander Kit from GP Designs costs almost as much as the Ryobi OSS450. So why buy a drill-press kit when you can buy a dedicated sander? After trying the GP Designs unit, we came up with two good reasons for going this route.

First of all, you can have an oscillating spindle sander without devoting any extra shop space to one. Second, unlike dedicated sanders that operate at a fixed speed, you can change the speed of a drill press to suit the diameter of the sanding drum. We found this valuable since small drums (¾"-diameter and under) sanded slowly on the dedicated units. With these small drums mounted in a drill press, we cranked the speed up to 3000 rpm for aggressive stock removal.

Our tests of the GP Designs kit were largely favorable. It took us about 20 minutes to install the unit on the Grizzly G1200 shown *right*. The stroke was adjustable between ⅛ and ⅝" by moving the clamp attached to the drill-press spoke. The connecting rod attaches and detaches in a second or two for switching between drilling and sanding operations. Included with every kit are well-designed plans for making a plywood dust-collection box that doubles as a table.

Our only knock against this well-made unit is the location of the on/off switch on the back of the motor housing. You cannot see the switch from an operating position, and reaching around to the back of the drill press proved awkward. The gear motor has its own power cord and plug.

The manufacturer supplies kits for most popular brands of floor-standing and benchtop drill presses. For more information about availability and accessories, call the phone number on *page 82*.

Dust collection: These models cleaned up on the competition

Both the Clayton and Ryobi units have 2½" dust ports for convenient connection to a shop vacuum hose. Hooked up this way, both machines provide for about 95-100 percent collection of the dust. These models work so effectively because both machines have dust-collection ducting that tightly surrounds the spindle just under the surface of the table.

As shown *below*, the Powermatic does a less effective job of dust collection because its ducting does not tightly surround the base of the spindle just under the table. Also, its undersized dust port does not connect to a common 2½"-diameter vacuum hose.

Like the Powermatic, the Enlon has a tilting table that inhibits the manufacturer from providing tight ducting around the spindle. However, the Enlon compensates for this limitation by having a 4" dust port for connection to a dust collector. Because dust collectors move larger volumes of air than shop vacuums do, a ducting system hooked up to a dust collector can be less than airtight and still work effectively.

The Vega unit provides no means of dust collection.

The Clayton model 146 spewed almost no sanding dust into the air during our tests.

Hooked to a 3-hp shop vacuum the Powermatic 14 collects most, but not all, sanding dust.

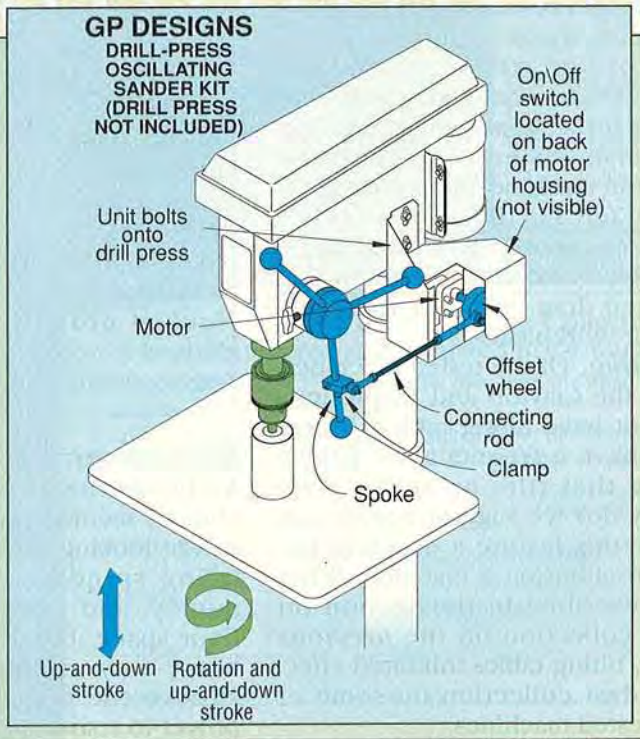
With no provision for dust collection, the Vega OS-3 produces a cloud of fine debris.

of an oscillating spindle sander should be solidly supportive, flat, smooth, and fixed at 90° to the spindle. On rare occasions you may need a table that tilts, so we'll also discuss this feature found on three tested machines.

1 *Support.* The chart on the *following page* shows you the size of each of the tables on our tested models. Keep in mind that the larger tables will provide better support for large workpieces.

2 *Flatness.* The tables on these machines should be flat to within about .015" across the diagonals of the table. Otherwise, you'll have a hard time sanding square edges. All of the machines passed this standard except for the Powermatic, with a "dished" center that measured .045" lower than all four outside edges. Powermatic's Mark Seymour told us that company officials recognize this problem, and the Taiwanese manufacturer has added a grinding step that will smooth the table considerably (see the *next* point), and make it flat to within a tolerance of .012".

Continued



OSCILLATING SPINDLE SANDERS

THE NITTY-GRITTY ON 5 OSCILLATING SPINDLE SANDERS

MANUFACTURER	MODEL (1)	TYPE (2)	MOTOR: HORSEPOWER (3)	SPEED: SPINDLE (RPM)	SPEED: STROKES PER MINUTE (4)	SPINDLE DIAMETER (INCHES) (5)	SPINDLE STROKE (INCHES)	LENGTH (1) (INCHES)	DRUMS: STANDARD SIZES (6) (DIAMETER-INCHES)	DRUMS: OPTIONAL SIZES (7) (DIAMETER-INCHES)	DRUMS: STORAGE (YES, NO)	TABLE: MATERIAL (8)	TABLE: SIZE (DEPTH x WIDTH) (INCHES)	PERFORMANCE EVALUATION (9): DUST-COLLECTION EFFECTIVENESS (10)	PERFORMANCE EVALUATION (9): TABLE TILT (11)	PERFORMANCE EVALUATION (9): TABLE FLATNESS	PERFORMANCE EVALUATION (9): SWITCHES (12)	OVERALL RATINGS (13): PERFORMANCE	OVERALL RATINGS (13): VALUE	HEIGHT (TO TABLETOP) (INCHES)	WEIGHT (POUNDS)	WARRANTY	COUNTRY OF ORIGIN (14)	SELLING PRICE (1)
CLAYTON	146*	I-ODP	1/2	1750	58	3/4*	13/16	9*	3/4, 1, 2, 3*	*	Y	S	13 1/4x21	E	N/A	E	G	10	9	14	80	1 yr.	U	$675*
ENLON	EN3407	I-TEFC	1	1725	30	15/16	1 1/2	5, 6, 9	**	--	Y	CI	24 1/2x24 1/2	G	E	E	G	9	10	36	303	1 yr.	T	595
POWERMATIC	14	I-TEFC	1/2	1720	30	7/8	7/8	5 1/2	1/4, 1/2, 3/4, 1 1/2, 2, 3	--	N	CI	14 1/2x14 1/2	F	G	P	E	6	4	19	75	1 yr.	T	300
RYOBI	OSS450	U	*	2000	58	1/2	5/8	4 1/2	1/2, 1	3/4, 1 1/2, 2, 3	Y	MDF-L	14x20	E	N/A	E	E	8	10	13 1/2	26	2 yrs.	U	180
VEGA	OS-3	I-ODP	1/4	1750	31-60*	5/8-5/16**	15/16	3	1/2, 1, 2	**	Y	HDP-L	12x16	N/A	F	E	P	6	3	13	40	1 yr.	U	360

NOTES:

1. (*) Same machine available with a 4 1/2"-high drum shaft as model 140 for $50 less.
2. (I-ODP) Induction, open drip-proof
   (I-TEFC) Induction, totally enclosed, fan cooled
   (U) Universal
3. Universal motors are typically rated according to amperage draw. Ryobi OSS450 draws 3.5 amps.
4. (*) Strokes per minute changed from 31 opm under no load to 60 opm under load.
5. (*) Model 140 has a 1/2"-diameter spindle.
   (**) Main shaft is 5/8" in diameter. Drum shaft is 5/16" in diameter.
6. (*) Model 140 comes standard with 1/2", 3/4", 2", and 3" spindles.
   (**) Enlon comes with drum shafts in various diameters and lengths: 1/4x5", 3/8x6", 1/2x6", 5/8x6", 3/4x9", 1x9", 1 1/2x9", 2x9", 3x9", and 4x9".
7. (*) Model 140: 1", 1 1/4", 1 1/2", 2 1/4", 2 1/2" Model 146: 1 1/4", 1 1/2", 2 1/4", 2 1/2", and 3" pneumatic drum.
   (**) Other sizes available by purchasing sanding drums from other manufacturers.
8. (CI) Cast iron
   (HDP-L) High-density particleboard - laminate covered
   (MDF-L) Medium-density fiberboard - laminate covered
   (S) Steel
9. E Excellent
   G Good
   F Fair
   P Poor
   N/A - Feature not available
10. E Collects 95-100% of dust
    G Collects 85-90% of dust
    F Collects 60-85% of dust
11. E Operates easily, locks solidly, with accurate scale.
    G Smooth, easy to operate, scale not accurate.
    F Smooth, easy to operate, does not lock solidly.
12. E Easily visible and accessible; lockable.
    G Accessible, but hard to see; not lockable.
    P Cord-mounted, hard to find, and easily damaged.
13. 1-10 scale with 10 being the highest possible score.
14. (T) Taiwan
    (U) United States

3 *Smoothness*. The Ryobi and Vega units have smooth tabletops made of wood-composite materials covered with a plastic laminate. Workpieces glide easily over these surfaces, as well as the finely finished steel surface of the Clayton machine and the cast-iron Enlon top. On the other hand, the Powermatic unit we tested had a roughly finished cast-iron top that created drag on the bottom side of our workpieces.

4 *Tilting*. Of the tested machines, only the Clayton and Ryobi units do not have tilting tables. Unless you have a frequent need for a table that tilts up to 45° (we rarely do) we suggest you do not make this feature a deciding factor in choosing a machine. Why? As described in the section on dust collection on the *previous page*, tilting tables inhibited effective dust collection on some of the tested machines.

A scoop from Sears

Just before this issue went to press we visited the engineering and testing facilities for Craftsman stationary tools. While there we got a sneak peek at a new oscillating sander set for sale in October. The $150 machine appears similar to the Ryobi, but has a direct-drive induction motor. The prototype looked promising, and we'll have a complete test report in an upcoming issue.

Recommendations

At the conclusion of our tests, the choices seemed pretty obvious. If you're looking for the most oscillating spindle sander for the money, and have the available floor space, buy the Enlon. This heavy-duty machine is made to survive the long haul, and has power to spare.

However, many of us don't have much floor space, and among the benchtop models we liked the Clayton and Ryobi units. The Ryobi gives the home hobbyist exceptional value. If you intend to use an oscillating spindle sander heavily, go for the Clayton (buy the model 140 unless you need the 9" drum height of the model 146). If you're really tight on space, try the GP Designs kit.

MANUFACTURERS' LISTING

Clayton
800/971-5050
810/548-2380

Enlon
909/468-3688

GP Designs
203/929-8158

Powermatic
800/248-0144

Ryobi
800/525-2579

Vega
800/222-8342

Written by Bill Krier
Technical Consultant: Dave Henderson
Illustrations: Kim Downing
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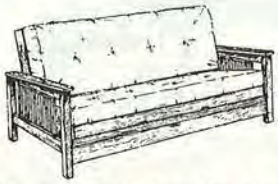

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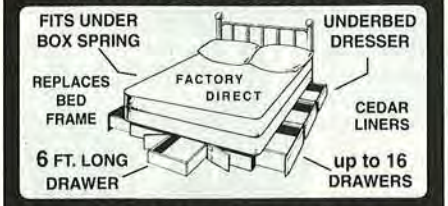

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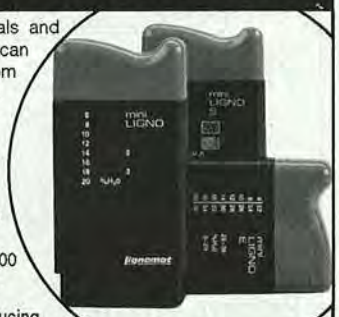

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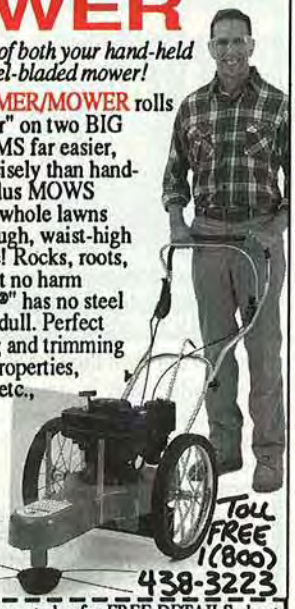

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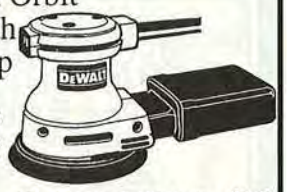

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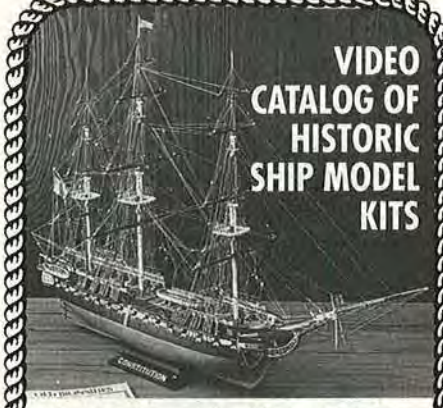

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447	7 1/4" FRAMERS SAW W/BRAKE 15 AMP	138
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550	*NEW POCKET CUTTER*	178
556	BISC JOINER W/CASE & TILT FENCE	172
556K	SAME AS ABOVE W/1000 BISCUITS	195
690	1 1/2 HP ROUTER W/1/4" & 1/2" COLLETS	134
690K	690 W/CS, EDGE GUIDE, & TEMP GD KIT	179
9690	1 1/2 HP ROUTER W/CASE	144
691	1 1/2 HP "D" HANDLE ROUTER	149
693	PLUNGE BASE ROUTER, 1 1/2 HP	169
695	SHAPER TABLE W/ 1 1/2 HP ROUTER	217
696	SHAPER TABLE	129
2620	3/8" VSR DRILL, 0-1200 RPM W/CHK	89
5008	DOVETAIL TEMPLATE	79
5009	MORTISE & TENON JIG	47
5116	OMNI JIG	253
6931	PLUNGE ROUTER BASE	74
7116	*NEW 24" OMNIJIG*	293
7310	LAMINATE TRIMMER, 5.6 AMP	88
7312	OFFSET TRIMMER	127
7319	TILT BASE TRIMMER	99
97335	5" RANDOM ORBIT SANDER, VS W/CSE	132
7335K	7335 W/CS, DUST EX SYS, 100 SHTS PPR	165
97336	6" RANDOM ORBIT SANDER, VS W/CSE	137
7336K	7336 W/CS, DUST EX SYS, 100 SHTS PPR	169
73333	RANDOM ORBIT DUST EXTRACTION	24
7518	3 1/4 HP FIXED BASE ROUTER-5 SPEED	269
7519	3 1/4 HP FIXED BASE ROUTER-1 SP	235
7536	2 1/2 HP FIXED BASE ROUTER	202
7537	2 1/2 HP FIXED BASE "D" HNDL RTR	206
7538	3 1/4 HP PLUNGE ROUTER-1 SPEED	235
7539	3 1/4 HP PLUNGE ROUTER-5 SPEED	269
7549	TOP HANDLE BAYONET SAW	134
7649	BARREL GRIP BAYONET SAW	147
7700	*NEW 10" LASERLOC MITER SAW*	338
9118	PORTA PLANE KIT W/CASE, CRBD BLD	209
9314	1 1/2" TRIM SAW KIT	152
9315	7 1/4" BUILDERS SAW KIT	139
9345	SAW BOSS 6" CIRCULAR SAW KIT	123
9347	7 1/4" FRAMERS' SAW W/STEEL CASE	138
9637	TIGER SAW VAR SPD RECIP SAW KIT	144
9647	TIGER CUB RECIP SAW KIT	119
9840	CRDLS DRILL KIT W/2 BAT, CS KYLS CK	148
9853S	12V CRDLS KIT W/2 BAT, CASE	169
97310	LAMNT TRIMMR KIT W/4 BASES & CS	194

Panasonic

EY6181CRKW	*NEW PREDATOR* 9.6V CORDLESS KIT VSR W/KYLS CHUCK, 22 STAGE CLUTCH W/2 BAT, CASE & CHRGR	158
EY6100CRKW	*NEW PREDATOR* 12V CORDLESS KIT VSR W/KYLS CHUCK, 22 STAGE CLUTCH W/2 BAT, CASE, & CHARGER	189

RYOBI

BT3000S	10" TABLE SAW WITH STAND	549
AP12	12" PORTABLE PLANER	398
TSS220	8 1/2" SLIDE COMPOUND MITR SAW	438
OSS450	OSCILLATING SPINDLE SANDR	174
D38VSR	3/8" VSR DRILL, 4.0 AMP, 0-2500 RPM	59

SUPER SPECIAL! $184

636 OSCILLATING TRIANGULAR SANDER
INCLUDES CASE & PAPER ASSORTMENT

DELTA

14-650	HOLLOW CHISEL MORTISER	284
22-540	12" BENCH TOP PLANER	396
28-180	BENCH TOP BAND SAW	164
31-080	1" BELT/5" DISC SANDER	93
31-460	4" BELT/6" DISC SANDER	128
33-060	NEW SIDEKICK 6 1/2" FRAME & TRIM SAW	379
34-162	TENONING JIG	84
37-070	*NEW* 6" VS BENCH JOINTER	259
40-560	16" SCROLL SAW, 2 SPEED	179
50-075	DUST COLLECTOR/SWEEPER, 3/4 HP	254
50-175	*NEW* KICKSTAND PRTBL WORK STAND	179

Milwaukee

0406-1	9.6V KYLS CDLS DRILL KIT W/2BAT, CS	169
0407-1	SAME AS ABOVE BUT 12 VOLT	173
6010	1/2 SHEET FINISHING SANDER	123
6017	1/4 SHEET FINISHING SANDER W/BAG	56
6125	5" RANDOM ORBIT SANDER	113
6126	6" RANDOM ORBIT SANDER	118
6256	TOP HANDLE JIG SAW	144
6491	10" MITER SAW W/BAG & 80T BLADE	288
6492	10" MITER SAW KIT COMPLETE	334
6507	VAR SPEED SAWZALL W/BLADES & CSE	145
6508	SAME AS 6507 BUT W/PERMANENT CRD	145
6527	SUPER SAWZALL W/BLADES & CASE	174
6528	SAME AS 6527 BUT W/PERMANENT CRD	174

SENCO

SLP20	BRAD NAILER W/CASE 5/8"-1 5/8" CAP	268
SFN40	FINISH NAILER W/CASE 1 1/4"-2 1/2" CAP	379

DEWALT

DW100	3/8" DRILL, 0-2500 RPM, 4 AMP	68
DW318K	4.5 AMP HVY DTY JIG SAW KIT W/CS	147
DW360	7 1/4" SAW W/BRAKE	149
DW430	3" X 21" DUSTLESS BELT SANDER	164
DW431	3" X 21" DSTLS BELT SANDER VAR SP	180
DW610	1 1/2 HP ROUTER, 9 AMP	147
DW614	1 1/4 HP PLUNGE ROUTER	143
DW615	1 1/4 HP PLUNGE ROUTER, VAR SP	158
DW624	3 HP HVY DUTY PLUNGE ROUTER	245
DW625	3 HP HVY DTY PLUNGE RTR, VAR SP	269
DW682K	BISCUIT JOINER KIT	224
DW9090	SUPER BATTERY CHARGER	119
DW944K2	9.6V CORDLESS KIT W/2 BATTERIES	148
DW945K2	12V CORDLESS KIT W/2 BATTERIES	166

HITACHI

D10DFKBE	9.6V, CRDLS DRILL KIT W/2BAT & CS-KYLS	148
DS12DVAKBE	12V CORDLESS DRILL KIT W/2 BAT	189
D10VC	3/8" DRILL VAR SP, REV, 3.2 AMPS	59
SV12SA	4 3/8" PALM GRIP SANDER	54
C8FB2	8 1/2" SLIDE COMPOUND MITER	579
C10FC	10" COMPOUND MITER SAW	259
CJ65V2	TOP HANDLE JIG SAW W/CASE	158
P20SB	3 1/4" PLANER, 3.4 AMP	89
TR6	LAMINATE TRIMMER	92
M8V	VAR SPEED PLUNGE ROUTER, 1/4"	149
TR12	3 HP PLUNGE ROUTER	184
M12V	3 HP VAR SPEED PLUNGE ROUTER	232

BOSCH

1003VSR	3/8" VSR DRILL W/KEYLESS CHUCK	92
1194VSR	1/2" VSR, 2 STAGE HAMMER DRILL	139
1272D	3" X 24" DUSTLESS BELT SANDER	205
1273D	4" X 24" DUSTLESS BELT SANDER	208
1273DVS	4" X 24" VS DUSTLSS BELT SANDER	219
1370DEVS	6" VS DSTLS RNDM ORB SNDR	224
1584VS	CLIC BARREL HANDLE JIG SAW, VS INCLUDES FREE CASE	157
1587VS	TOP HANDLE JIG SAW, VS W/CASE	162
1604	1 3/4 HP ROUTER	142
1608	LAMINATE TRIMMER	95
1609KX	DELUXE INSTALLERS KIT W/4 BASES	229
1613EVS	2 HP VAR SP PLUNGE ROUTER INCLUDES FREE EDGE GUIDE	199
1614EVS	1 1/4 HP VAR SP PLUNGE ROUTER	159
1615EVS	3 1/4 HP VAR SP PLUNGE ROUTER *INCLUDES FREE EDGE GUIDE!*	289
3054VSR	12V CORDLESS KIT W/2 BAT, CASE	188
3282DVS	5" VS DUSTLESS RANDOM ORBIT	95
B7000	TRIANGULAR CORNER SANDER	75

Emglo

AM78HC4V 1 1/2 HP COMPRESSOR $299.00

SKIL

77	7 1/4" WORM DRIVE CIRCULAR SAW	145
1605-02	BISCUIT JOINER WITH CASE & FREE GLUE SYSTEM	129
2736-04	12V VSR CORDLESS DRILL KIT WITH 15 PIECE BIT SET	135
3400	10" TABLE SAW W/FREE CARB BLADE	179
5657	7 1/4" CIRCLE SAW W/6 CARBIDE BLDS	119
5860	8 1/4" WORM DRIVE SAW	172
9410	4 1/2" DISC GRINDER	59

MIRKA Abrasives, Inc.

5" SOLID PSA PAPER - 100 PER ROLL 80 - 320 GRIT	$12.95
5" HOLED PSA PAPER - 100 PER ROLL FOR PORTER CABLE 5" HOLED PADS - 80 - 320 GRIT	12.95
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6" HOOK & LOOP PAPER FOR BOSCH 1370DEVS 50 PER BOX 80 - 320 GRIT	12.95

freud

JS100	BISCUIT JOINER	164
JS102	BISC JOINER W/TILT FENCE & DUSTBG	189
FT2000E	3 1/4 hp PLUNGE ROUTER VS	206
EB100	EDGE BANDING SYSTEM	208
EDS132	13.2V CRDLS DRILL KIT W/2 BAT	215
FC107	7 PC CARBIDE FORSTNER BIT SET	84
F410	10" X 40T QUIET BLADE	48
F810	10" X 80T QUIET BLADE	73
LM72M010	10" X 24T FLAT TOP RIP BLADE	36
LU82M010	10"X 60T CROSSCUT RIP BLADE	49
LU84M010	10" X 50T ATB COMBO BLADE	40
LU85M010	10" X 80 T ATB FOR MIRROR FINISH!	58
LU87M010	10" X 24T RIP BLADE THIN KERF	39
LU88M010	10" X 60T CROSSCUT THIN KERF	45
LU89M010	10" X 72T TCH NON FERROUS METAL	57
LU92M010	10" X 80T TCH - BEST FOR LAMINATES	59
LU94M010	10" X 80 T TCH PLEXIGLASS BLADE	58
LU96M010	10" X 80 T TCH LAMINATES OR WOOD	67
SD308	8" SAFETY DADO WITH CASE	116
SD506	*NEW 8" SUPER DADO SET*	168
TK206	10" X 24T THIN KERF RIPPING	25
TK306	10" X 40T THIN KERF COMBINATION	25
TK606	10" X 60T ATB COMPOUND MITER BLD	39
TK806	10" X 80T ATB ULTIMATE CROSSCT BLD	44
TK906	10" X 50T THIN KERF CROSSCUT	29
TK406	10" X 60T THIN KERF FINISHING	34
90-100	15 PC ADVANCED ROUTER BIT SET	159
91-100	13 PC ROUTER BIT SET	179
94-100	CABINET DOOR SET, 1/2" SHANK	158
95-100	5 PC CABINET & MOULDING BIT SET	199

HITACHI

MODEL C8FB2
8 1/2" Slide Compound Miter Saw

Includes 24T carbide blade, vise, dust bag & 50' extension cord
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Adjustable footplate, 1" stroke length
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Universal blade clamp, 4.8 amps, 4 way adj. orbit. Full 1" stroke
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Shoots 18 gauge brad from 13/32" - 1 9/16" and includes case & 5000 assorted brads
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PORTER+CABLE

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Includes 2 batteries, charger & steel case.
12V, 1 hour charge. Var. speed, reversible.
$169.00

BOSCH

MODEL 1613EVS
2 Hp Plunge Router

INCLUDES EDGE GUIDE!
Electronic variable speed with Microfine Depth Adjustment.
$199.00

Jorgensen

ITEM	JAW LENGTH	OPEN CAP	OUR PRICE EACH	BOX OF 6
ADJUSTABLE HANDSCREWS				
#0	8"	4 1/2"	11.70	57.95
#1	10"	6"	12.50	67.95
#2	12"	8 1/2"	14.50	77.95
STYLE 37 2 1/2" THROAT 1/4" x 3/4"				
3706	6"		6.00	32.50
3712	12"		6.50	35.00
3718	18"		6.95	37.75
3724	24"		7.95	42.50
3730	30"		8.60	47.75
3736	36"		9.95	53.95
PONY SPRING CLAMPS - 3201HT 1" - 1.25				
3202HT 2"	1.79	3203HT 3"	3.99	
#50	3/4" BLACK PIPE CLAMPS	BOX OF 12 $69.95	7.90	
#52	1/2" BLACK PIPE CLAMPS	BOX OF 12 $72.95	6.75	

AIRY

USES SENCO NAILS & STAPLES!

0241SK	18 GAUGE BRAD NAILER 3/8"-1 9/16" WITH CASE & 5000 NAILS (SAME AS SLP20)	98
0250SK	18 GAUGE BRAD NAILER 3/4"-2" W/CASE & 5000 NAILS	165
0565T	ANGLE FINISH NAILER 1"-2 1/2" (SAME AS SFN1 & SFN2!)	204
0626SK	NARROW CROWN 1/4" STAPLER 1/2"-1" WITH CASE & 5000 STAPLES	104
0645S	NARROW CROWN 1/4" STAPLER 3/4" - 1 3/4" CAPACITY	189
8290	STICK FRAMING NAILER - 6 TO 16 PENNY CAPACITY. COMPATIBLE W/SENCO OR HITACHI NAILS	319
EZ-1	SHOOTS 1/4", 3/8", 1/2" CRN STAPLES & BRADS, 5/8" CAP, W/CASE & 5000 ASSORTED FASTENERS	99

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LET'S TALK TOOLS

Continued from page 69

Router speed controller:
MLCS
P.O. Box 4053
Rydal, PA 19046
800/533-9298
215/938-5060

Scrollsaw magnifying lamp and footswitch:
Penn State Industries
2850 Comly Rd.
Philadelphia, PA 19154
800/377-7297

Socket-wrench set, adjustable-jaw wrenches, and flush-rivet pliers:
Sears
Call or visit your local Sears store.

Square-drive screws and driving bits, adjustable trammel and pencil compass:
McFeely's
P.O. Box 3
Lynchburg, VA 24505-9937
800/443-7937

HAND TOOLS

Most hand tools including planes, saws, rules, hammers, chisels, squares, screwdrivers, levels, and knives:
Stanley
600 Myrtle St.
New Britain, CT 06050
203/225-5111

Pipe clamps, E-Z Hold Bar Clamps, and handscrew clamps:
Jorgenson and Pony brands
Adjustable Clamp Co.
417 N. Ashland Ave.
Chicago, IL 60622
312/666-0640

Quick-Grip Bar Clamps, Quick-Grip spring clamps, tin snips, aviation snips, Vise-Grip Locking Pliers, and Chesco fold-up hex-key sets:
American Tool Companies
301 S. 13th St., Suite 600
Lincoln, NE 68508
402/435-3300

MISCELLANEOUS SUPPLIES

Fastener organization and storage:
Sorta-Neat Sort-N-Store System
Plano Molding Co.
431 E. South St.
Plano, IL 60545-1061
800/874-6905

Finishes:
Minwax
15 Mercedes Drive
Montvale, NJ 07645

Lubricant sprays:
Bostik
Boston St.
Middleton, MA 01949
800/726-7845 (U.S.)
800/461-0418 (Canada)

Our air-tool cabinet features pneumatic tools from Campbell Hausfeld (see story listing for model numbers). We also included Bostik pneumatic lubricant.

Pegboard-hook system for storage and display of tools and fasteners:
Windsor Industries
86 Elinor Ave.
Akron, OH 44305
800/678-2552
216/733-2266

Reels for compressed air hose and electric cords:
Reelcraft Industries
2842 E. Business 30
P.O. Box 248
Columbia City, IN 46725-9987
800/444-3134

Vise:
Model 52½ED
Record Tools
1920 Clements Road
Pickering, Ont. L1W 3V6
905/428-1077

Wall standards and brackets for lumber storage:
Woodworker's Supply
1108 N. Glenn Rd.
Casper, WY 82601
800/645-9292
307/237-5528

Sorta-Neat system for organizing fasteners by Plano

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Freud saw blades, dado set, and router bits

Quick-Grip Bar Clamps by American Tool Co.

Foot switch for scroll-saws from Penn State Industries

ORDER 1-800-328-0457 MAIL ORDER HOURS M-F 7:00-5:30 C.S.T. SAT 8:00-1:00

DELTA TOOLS

Model	Description	List	Sale
23-700	Wet/Dry Grinder	234	178
23-680	6" Bench Grinder 1/4 HP	86	75
11-950	8" Drill Press	199	138
31-050	1" Belt sander 2.0 amp	104	78
31-460	4" Belt/Disc Sander	198	129
31-340	1" Belt/8" Disc Sander	268	204
40-560	16" 2 speed Scroll Saw	266	178
11-990	12" Bench Drill Press	276	205
11-090	32" Radial Bench Drill Press	399	305
43-355	3/4" Shaper 1-1/2 HP	964	749
43-505	1/2" Bench Router/Shaper	399	285
22-540	**12" Bench Top Planer**		398
36-220	10" Compound Mitre Saw	350	229
28-180	Bench Band Saw	232	165
28-190	NEW 12" Band Saw	465	385
40-640	20" Bench Scroll Saw	466	295
37-070	NEW 6" w/spd Bench Jointer	337	249
14-650	Hollow Chisel Mortiser	668	269
46-700	12" Wood Lathe	548	445
33-990	10" Radial Arm Saw	818	639
37-280	6" Motorized Jointer	488	395
50-179	3/4 HP 2 stage Dust Collector	483	345
33-055	8-1/4" Sawbuck comp w/legs	865	615
34-330	8-1/4" Table Saw 13 amp	343	245
32-100	Stationary Plate Jointer	645	255
36-040	8-1/4" Compound Mitre Saw	224	155
34-915	30" Unifence	385	239
34-897	50" Delta Unifence	525	285
36-755	10" Tilt Arbor Saw	1264	965
34-444	Contractors Table Saw	812	619
17-900	16-1/2" Floor Drill Press	462	399
33-060	"Sidekick" Miter Saw	510	375
14-070	14" Floor Drill Press	450	349
37-190	NEW 6" Deluxe Jointer	554	469
36-275	NEW 8-1/4" Builders Saw	444	265
36-210	NEW 10" Compound Mitre Saw	438	359
36-070	NEW 10" Mitre Saw	284	169

The following Delta Tools have Rebates !
Rebates start 9-15-94
$50 Rebate

28-283	14" Band Saw w/enc. stand	910	745
34-445	34-444 Saw w/30" Unifence	1200	775
	$75 Rebate		
22-661	13" Planer w/ 2HP motor	1513	1189
37-154	DJ15 6"Jointer w/3/4HP motor	1451	1155

MILWAUKEE TOOLS

6527	NEW Sawzall with case	320	172
6528	above Sawzall w/wired cord	316	172
6126	NEW 6"Random Orbit Sander	205	124
0399-1	12V cordless Drill Kit comp	315	172
0402-1	**above Drill w/kyls chuck & 2 batt**		174
0395-1	9.6V cordless Drill with case	290	158
0224-1	3/8" Drill 4.5 amp magnum	227	124
0234-1	1/2" Drill 4.5A mag 0-850 rpm	237	124
0244-1	1/2" Drill 4.5A mag 0-600 rpm	237	124
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	198	109
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	195	109
0375-1	3/8" close quarter Drill	237	129
0379-1	1/2" close quarter Drill	268	152
6546-1	cdls Scrwdvr 200 & 400 rpm	141	82
5399	1/2" D-hdle Hammer Drill Kit	332	194
6750-1	Drywall Gun 0-4000 5 amp	171	94
6507	Original SawZall with case	264	144
8977	Variable temp. Heat Gun	131	79
5397-1	3.8" var. spd Hammer Drill Kit	255	142
5371-1	1/2" var. spd Hammer Drill Kit	340	188
3107-1	1/2" v/spd right angle Drill Kit	399	219
6754-1	Drywall Gun 0-4000 5.4 amp	196	112
3300-1	1/2" var. spd right angle Drill	356	194
5680	Router 2 HP - 12 amp	362	198
0235-1	1/2" Drill w/keyless chuck	237	128
6142	4-1/2" Grinder w/cse & access.	208	124
6749-1	Drywall Gun 0-2500 5.4 amp	218	124
6365	7-1/4" Circular Saw 13 amp	218	122
6368	6365 w/fence & carbide blade	228	127
6368	6365 w/fnce,carb. blde,& cse	249	139
6377	7-1/4" Worm Drive Saw	330	184
6256	Top Handle Jig Saw	264	148
6490	10" Mitre Saw	444	255
6491	6490 w/ carbide blade & bag	532	289

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10"	69	39
LU82M010	Cut-off	10"	93	49
LU84M011	Comb	10"	50	78
LU85M010	Super Cut-off	10"	80	115
LM72M010	Ripping	10"	24	69
LU73M010	Cut off	10"	60	84
LU87M010	Thin Kerf	10"	24	72
LU88M010	Thin Kerf	10"	60	88
LU98M010	Ultimate	10"	80	128
LU91M010	Compnd Mitre	10"	60	88
F410	NEW Quiet Blade	10"	40	95
F810	NEW Quiet Blade	10"	80	135
TK303	7-1/4" Finishing		40	38
TK906	10" Combo		50	53
SD306	6" Dado - Carbide			215
SD308	8" Dado - Carbide			230
SD506	6" carbide w/case & shims			292
SD508	8" carbide w/case & shims			344
F0	1-3/4" x 5/8" Biscuit 1000 Qty		43	29
F10	2-1/8" x 3/4" Biscuit 1000 Qty		43	29
F20	2-3/4" x 1" Biscuit 1000 Qty		45	29
FA	Assorted Biscuits 1000 Qty		45	29
FB100	16 piece Forstner Bit Set		338	184
94-100	5 pc. Router Bit Door System		320	159
TR215	NEW 10" Slide Cmpd Mitre Saw		688	359
JS102	NEW Biscuit Jointer w/adj.fnc&cs		355	188

These FREUD Tools have a $30.00 Rebate !
Price shown is before rebate.

FT2000E	3-1/4 HP v/sp Plunge Router	410	205
JS100	Biscuit Jointer with case	334	164

MAKITA TOOLS

Model	Description	List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	128	64
6172DWE	3/8" v/spd Drill Kit w/ 2 batt	220	109
5090DW	3-3/8" Saw Kit 9.6 volt	270	145
ML900	Incandescent Flashlight 9.6V	Sale	37
DA391DW	3/8" angle Drill Kit 9.6 volt	312	169
6012HDWE	2 speed Drill Kit w/2 batt.	243	129
6093DWE	6093DW Drill Kit w/2 batteries	270	139
6095DWE	**6095DW Drill Kit w/2 batteries**		139
6201DWE	NEW 9.6V Drill Kit w/2 batt.	298	158
6211DWE	12V Drill Kit with 2 batteries	330	175
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
5007NBA	7-1/4" Saw w/electnc brake	263	129
5008NBA	8-1/4" Saw w/electric brake	346	195
B04510	1/4 sheet Pad Sander	106	59
9900B	3" x 21" Belt Sander w/bag	344	169
9924DB	3" x 24" Belt Sander w/bag	329	178
4301BV	Orb. var. spd Jig Saw 3.5A	292	149
JR3000V	var. speed Recip Saw w/case	252	135
LS1020	10" Mitre Saw 3.5 amp	630	355
9820-2	Blade Sharpener	394	199
N1900B	3-1/4" Planer with case	244	129
9514B	4" Disc Grinder 4.6 amp	111	59
B04550	1/4 sheet Pad Sander w/bag	98	54
DA3000R	3/8" Angle Drill	314	179
2708W	8-1/4" Table Saw	585	298
2711	10" Table Saw with brake	1067	565
6404	3/8" Drill Rev. 0-2100 rpm	112	58
6510LVR	3/8" Drill Rev. 0-1050 rpm	168	93
6820V	0-4000 rpm Drywall Gun	171	92
6013BR	1/2" Drill Rev. 6 amp	280	139
9401	4" x 24" Belt Sander w/bag	378	215
4302C	var. speed Orbital Jig Saw	351	199
5077B	7-1/4" Hypoid Saw	281	155
5007NB	7-1/4" Circular Saw 13 amp	232	124
5007NBK	5007NB Saw w/ plastic case	Sale	129
2012	12" Portable Planer	959	539
LS1011	10" Slide Compound Saw	946	539
3612BRA	3 HP Plungr Router w/ brake	524	175

SIOUX TOOLS

8030	New 3/8" var/spd Drill	250	145
8000	3/8" var/spd close qtr Drill	201	125
690	5" Air Random Orbit Sander	139	132

SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2"	448	298
SN325	Nailer 1-7/8" - 3-1/4"	665	419
SLP20	New Pinner w/cse 5/8 -1-5/8"	399	269
SKS	Stapler 5/8" - 1-1/2"	390	269
SN70	Fram. Nailer Clip Hd 2"-3-1/2"	690	475
SN60	Fram. Nailer-Full Hd 2"-3-1/2"	638	455
SFN40	NEW Finish Nailer 1-1/4 - 2-1/2	571	385

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	348
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	425
N60FN-2	Finishing Nailer	650	335
T31	Brad Nailer	281	145
CWC100	1 HP Pancake Compressor	463	289

EXCALIBUR Fences & Tables

TT45R24L9	24" Fence	369	299
TT45R50L12	50" Fence	399	318
EXSLT30	Sliding Table	599	475
EXSLT60	Sliding Table	745	585

SKIL SIZZLERS

77	7-1/4" Worm Drive Saw	257	144
2735-04	12 volt cordless Drill Kit	249	144
2736-04	2735-04 with keyless chuck	269	145
1605-02	Biscuit Joiner w/case	221	129
3400	10" Table Saw - Bench Top	270	185

PANASONIC CORDLESS

EY6205EQK	Same as EY6205BC but comes with **Ironman** battery	368	192
EY6207BC	NEW 12 volt 1/2" Drill w/keyless chuck var. speed w/15 min. charger & case	420	222
EY6282EQK	Var. spd 9.6 volt Drill with 15 min. charger, case & NEW **Ironman** battery	315	169
EY62821DKW	9.6 volt Drill Kit w/2 batt.	395	162

NEW PREDATOR DRILLS

EY6181CRKW	NEW 9.6V Compact Drill Kit w/2 batt - 10% more pwr than EY6282IDKW	305	158
EY6100CRKW	NEW 12 volt Drill Kit with 2 batteries, 1 hour charger, & case	358	189
EY6100EQK	NEW 12 volt Drill kit with NEW **Ironman** battery, 15 min. charger, & cse	375	199

PASLODE IMPULSE GUNS

IM250	Trimpulse Finish Nailer Kit	849	565
IM325	Impulse Framing Nailer Kit	849	565

WAGNER PAINT & SPRAYER PRODUCTS

230HD	Power Painter/Sprayer	100	84
255	Airless Kit	180	130
375E	Airless System	195	159
505	High performance Airless Painter	440	369
HVLP	Fine coat finishing HVLP System	195	155
CS2000	Pro fine finish HVLP System	339	269

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0241SK
Brad Nailer 3/8"-1 9/16"
Same as Senco SLP-20
List 180 Sale 98

0250SK
Brad Nailer 3/4"-2"
List 296 Sale 169

0626SK
1/4" Crown Stapler 3/8"-1"
List 194 Sale 109

0635SK
1/4" Crown Stapler 1/2"-1-3/8"
Same as Senco SKS
List 310 Sale 175

Above Nailers come w/case, fasteners, oil & wrenches

0565T
Angle Finish Nailer 1"-2-1/2"
List 386 Sale 205

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198.00

DEWALT TOOLS

DW364	7-1/4" Circ. Saw w/brake	13 A	285	154
DW945K-2	3/8"12V cdls Drill Kit w/2 batt		309	169
DW944K-2	3/8"9.6V cdls Drill Kit w/2 batt		283	149
DW610	1-1/2 HP 2 handle Router		274	154
DW411	1/4 sheet Palm Sander, 1.7 amp		97	58
DW1003	3/8" Drill, 4 amp,0-2500 rpm,rev.		118	68
DW682K	NEW Biscuit Joiner with case		429	238
DW705	12" Compound Mitre Saw		706	379
DW615	NEW 1-1/4 HP Elec. Plge Router		290	158
DW625	**NEW 3 HP var. spd Plunge Router**			274
DW675K	NEW 3-1/8" Planer with case		289	164
DW431	NEW 3 x 21 v/spd Belt Sander		331	184
	NEW DEWALT CORDLESS DRILLS			
DW952K	3/8" v/spd incl. one 9.6V batt		280	165
DW953K	3/8" v/spd incl. one 12V batt		306	179
DW962K-2	3/8"v/sp incl. two 9.6V XRbatt		324	189
DW972K-2	3/8"v/sp incl. two 12V XRbatt		352	199
DW991K	3/8"v/sp incl. one 14.4V XRbatt		370	219

Above drill kits come w/charger & steel case!

PORTA NAILER

401	Porta Nailer complete	265	205
501	Face Nailer complete	265	205

WERNER LADDERS

6204	4' Fiberglass	179	65
6205	5' Fiberglass	199	75
6206	6' Fiberglass	225	82

HITACHI TOOLS

F1000A	12" Planer/6" Jointer	2970	1559
P12R	12-9/32" Planer	1470	779
P12RA	Planer/Joiner	1940	989
C8FB	8-1/2" Slide Compound Saw	1400	599
G12SA	4-1/2" Grinder 6.9 amp	160	89
DS10DVAK	NEW 12V Cordless Drill Kit	393	199
NR83A	Fram Nailer 2 - 3-1/2 Full Head	700	385
NR83AA	Framing Nailer 2 - 3-1/2 Clip Head	750	414
NT65A	16 ga. Brad Nailer 1 - 2-1/2	610	328
NV45AB	Coil Roofing Nailer 7/8 - 1-3/4	750	409
NV83A	Coil Nailer 2 - 3-1/4	750	415

BIESEMEYER FENCES

B-50	50" Commer. Saw Fence	345	298
T-SQUARE 52	52" Homeshop Fence	279	238
T-SQUARE 40	40" Homeshop Fence	259	208
T-SQUARE 28	28" Homeshop Fence	249	198

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Length	Jaw Cap	Open	List	Sale	Box of 6
#0	8"	4-1/2"		19.76	11.75	58.00
#1	10"	6"		22.63	12.50	68.00
#2	12"	8-1/2"		25.95	14.50	78.00
#3	14"	10"		32.88	18.00	99.00
#4	16"	12"		42.76	23.95	139.00

JORGENSEN STYLE 37 2-1/2"Throat 1/4"x3/4"

Item#	Jaw Length	List	Sale	Box of 6
3724	24"	14.25	7.99	42.50
3730	30"	15.88	8.85	47.75
3736	36"	17.36	9.99	53.95

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	14.87	7.90	89.95
52	1/2" Black Pipe Clamps	12.40	6.80	72.95

BOSCH

Model	Description	List	Sale
1587VS	NEW Top Hand "CLIC" Jig Saw	292	149
1584VS	NEW Barrell "CLIC" Jig Saw	285	149
	Bosch Metal Case for above Jig Saws	34	32
	Bosch 30 blade assortment for Jig Saws		27.99
1942	Heat Gun 600° - 900°	125	78
1272D	3" x 24" Belt Sander with bag	375	204
1273D	4" x 24" Belt Sander with bag	380	208
11-212VSR	Bulldog 3/4"SDS Rtry Drill	390	209
1347AK	4-1/2" Grinder w/cs & access.	185	109
1348AE	5" Grinder 8.5 amp	225	129
1194VSR	1/2" var. speed Hammer Drill	282	149
1194VSRK	above Hammer Drill w/case	313	169
1608	5.6 amp Laminate Trimmer	168	95
1609K	Lam Installers Kit with 1609	343	184
1609KX	Deluxe Installers kit	405	228
1604A	1-3/4 HP 2 Handle Router	250	139
1604AK	same as above w/cse & acc	318	185
1606A	1-3/4 HP D-handle Router	295	185
3258	3-1/4" Planer w/blade guard	247	155
3258K	3258 Planer with steel case	273	169
3270DVS	3 x 21v/spd belt sander w/ bag	270	165
1273DVS	Var. spd 4" x 24" Belt Sander	415	219
1614	NEW 1HP Plunge Router	245	149
1614EVS	NEW 1-1/4HP v/spd Plge Rtr	283	155
1613	NEW 1-3/4 HP Plunge Router	316	169
1613EVS	**NEW 2HP v/sp Plunge Router**		183
1615	NEW 3 HP, Plunge Router	430	259
1615EVS	NEW 3 HP v/spd Plge Router	505	278
1632VSRK	Recip Saw 8.4A orb-v/spd	225	154
3050VSRK	9.6V cdls v/sp Drill Kit comp	288	149
3051VSRK	3050VSRK w/keyless chuck	299	145
1370DEVS	6" Random Orbit Sander	427	224
3283DVS	5" Random Orbit Sander	169	98
3283DVSK	3283DVS Kit complete	199	118
B1650K	NEW Biscuit Joiner	289	165
B7000	NEW Corner Detail Sander	122	79
B4050	NEW In Line Jig Saw	199	119

ELU BY BLACK & DECKER

Model	Description	List	Sale
3338	2-1/4 HP v/spd Plunge Router	501	199
3375	3-1/8" Univ. planer 7.2 amp	329	159
3380	Biscuit jointer with case	569	185
3339	NEW 3 HP v/sp Plunge Router	511	269

BLACK & DECKER

1166	3/8" Drill 0-2500 rpm 4 amp	118	65
79-034	Workmate 400	181	109
2694	7-1/4" Super Sawcat w/case	285	152
2695	8-1/4" Super Sawscat w/case	328	162

DAVID WHITE

LP6-20	Sight Level package - 20x	310	195
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod		259
L6-20	Meridian Level - 20x	290	188
LT8-300	Level Transit - 26x	695	445
LT8-300P	above Level w/optical plum	821	518
LT6-900	Level Transit - 20x	389	249
ALT6-900	Automatic Level - Transit -18x	638	409
ALTP6-900	above Level w/tripod & rod	708	469
ALP6-18HD	above Level w/tripod & rod	570	375
ML100 I	NEW Laser Level	1099	945
ML100	NEW Laser Level w/detector,	1249	1075

RYOBI SPECIALS

TS-254	10" Mitre Saw	440	209
RE600	3 HP Plunge Router	500	235
BE321	3" x 21" var. spd Belt Sander	310	135
TFD222VRK	12V cordless Drill Kit	365	155
TFF100	Flashlight uses 7.2,9.6,12v battery		19.95
JM100K	Biscuit Jointer w/case	475	218
BT3000	10" Table Saw with stand	1125	529
TSS220	8-1/2" Slide Comp. Saw	966	445
DS1000	NEW Detail Sander	90	44
AP12	NEW 12" Bench Planer	884	399
RA202	NEW 8-1/4" Bench Radial Saw	800	389
BS900	NEW 9" Bench Band Saw	340	174
OSS450	NEW Oscilating Spindle Sander	340	174

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LPN672	PONY Air Palm Nailer w/glove	Sale	94.99

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2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39
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2601	Wall Jack	167	108
	Lots of 4 deduct additional 10%		

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690	1-1/2 HP Router 8 amp	260	138
691	1-1/2 HP Router D-handle	285	155
695	1-1/2 HP Router/Shaper	400	223
696	HD Shaper Table	230	129
351	3" x 21" Belt Sander w/o bag	280	154
352	3" x 21" Belt Sander with bag	290	159
360	3" x 24" Belt Sander with bag	365	194
361	3" x 24" Belt Sander w/o bag	345	189
362	4" x 24" Belt Sander with bag	380	205
363	4" x 24" Belt Sander w/o bag	360	195
315-1	7-1/4" Top Hdle Circular Saw	225	118
9315-1	315-1 comp. w/cs & carb bld	255	139
97751	1/2" v/spd Hammer Drill w/cse	270	155
9118	Porta Plane Kit 7 amp	390	215
505	1/2 sheet Pad Sander	230	128
6811	3/8" var. speed Drill 5.2 amp	220	125
6614	1/2" var. speed Drill 0-750 rpm	230	128
6615	7514 with keyless chuck	230	128
7549	Top handle Jig Saw 4.8 amp	270	135
330	Speed Block Sander 1/4 sheet	110	60
555	Plate Biscuit Jointer with case	320	159
556	**555 jointer w/5556 tilt fence**		184
345	6" Saw Boss 9 amp	190	104
9345	345 comp. w/cse & carb blde	220	124
9647	TIGER CUB Recip. Saw	210	119
9637	Full var/spd Recip Saw 8 amp	270	148
7519	3-1/4 HP Router 2 Handle	445	239
7518	3-1/4 HP 5 speed Router	510	275
7538	3-1/4 HP Plunge Router	445	239
7399	5.6 amp Drywall Cutout Unit	140	84
7310	5.6 amp Laminate Trimmer	165	95
97310	Laminate Trimmer Kit comp	360	198
7334	5" Random Orbit Sander	225	122
7335	5" var. spd Rndm Orbit Sndr	245	132
7336	6" var. spd Rndm Orbit Sndr	250	137
73333	Dust Collection system	31	24.50
693	1-1/2 HP Plunge Router Base	320	174
6931	Plunge Router Base	125	77
7539	3-1/4HP v/spd Plunge Router	510	275
9852	12V 3/8"Drill w/cse 0-1000rpm	280	154
9853	9852 with keyless chuck	280	154
9855	12V 1/2" 2 spd,v/sp Drill w/cs.	335	188
8500	12V battery for above drills	Sale	45
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9841	9.6V Drill Kit-15 min. charger	309	169
9840	9.6V Drill Kit with 2 batteries	289	164
332	Palm Grip Rndm Orbit Sander	120	69
333	above Sander with dust bag	135	75
334	333 Sander with PSA pad	135	74
352VS	3x21 Belt Sander w/bag v/spd	305	169
7116	24" Omni Jig	535	294
550	Pocket cutter with case	330	179
310	Production Laminate Trimmer	250	145
7700	10" "Lazerloc" Mitre Saw	634	344
347	7-1/4" "Framers" Circ Saw	225	129
447	347 Saw with brake	245	139

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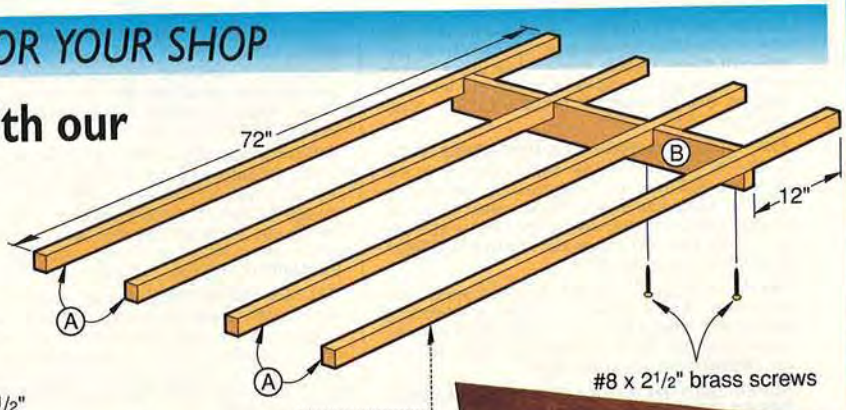

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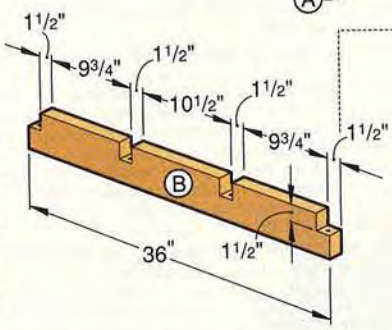

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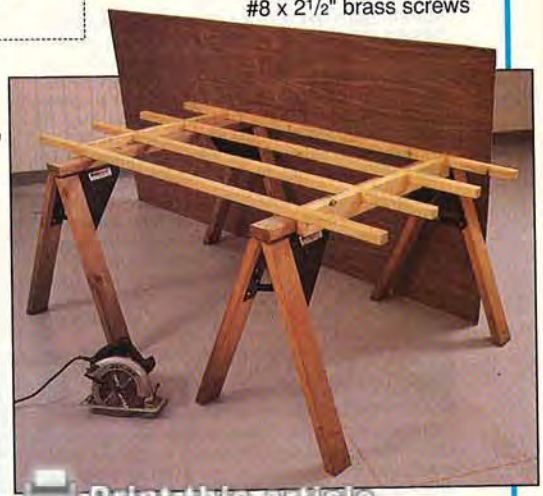

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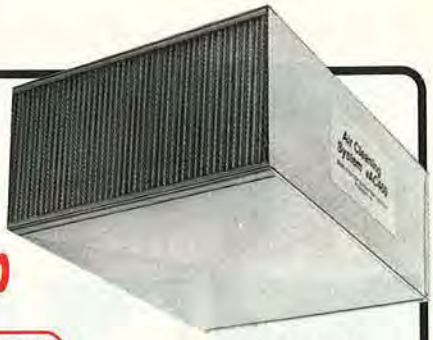

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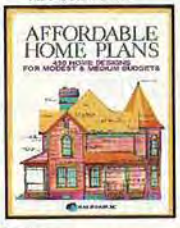

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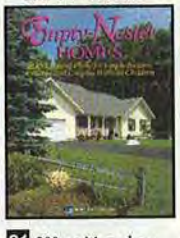

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Continued from page 77

Miss LIBERTY

A framework for Liberty

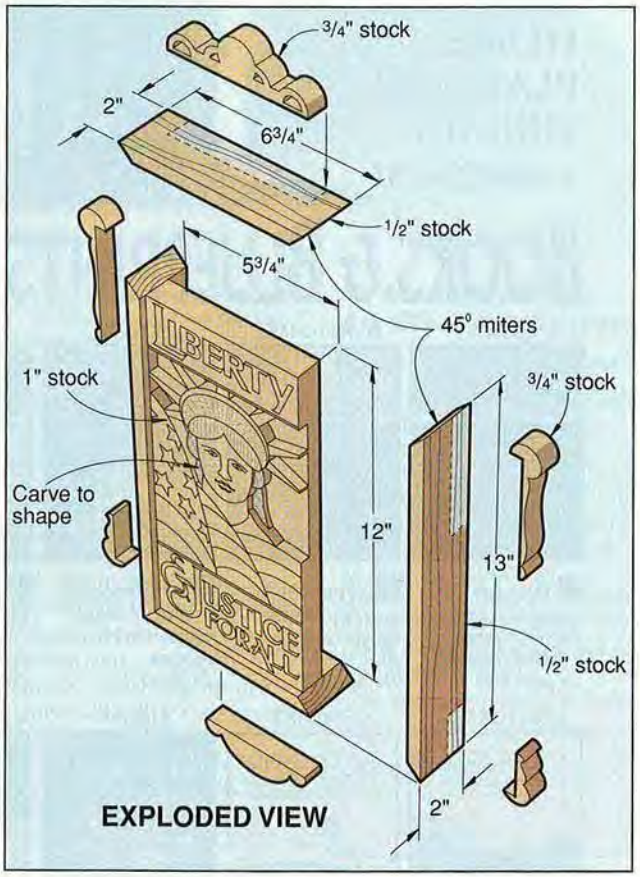
Miter-cut four pieces of ¼"-thick pine 2" wide, to frame the carving. Fit these frame pieces, but do not attach them yet. Transfer the patterns for the top, bottom, and corner ornaments to ¾" stock. (We used pine.) Scrollsaw them. Cut two of each corner piece, and flip one of each over for the opposite corner.

Sand all of the frame pieces and ornaments to 320 grit, rounding over the corners (except on mating surfaces). Stain the inside faces of the frame to match the textured area on the carving.

Attach the frame to the carving with brads and glue. Let the front edge of the frame stand out about ¼" from the carving. To do this easily, lay the carving facedown on a couple of ¼"-thick strips about 11" long as you install the frame pieces.

Set the brads and fill the holes on the outside of the frame. Sand the frame. Then, glue the top, bottom, and corner ornaments to the frame where shown. Clamp with rubber bands. Let dry, then stain the outside of the frame. Apply a clear finish.

Drive two #214 screw eyes into the carving's back, about 3" from the top near each edge. Tie picture wire between them to hang your masterpiece.



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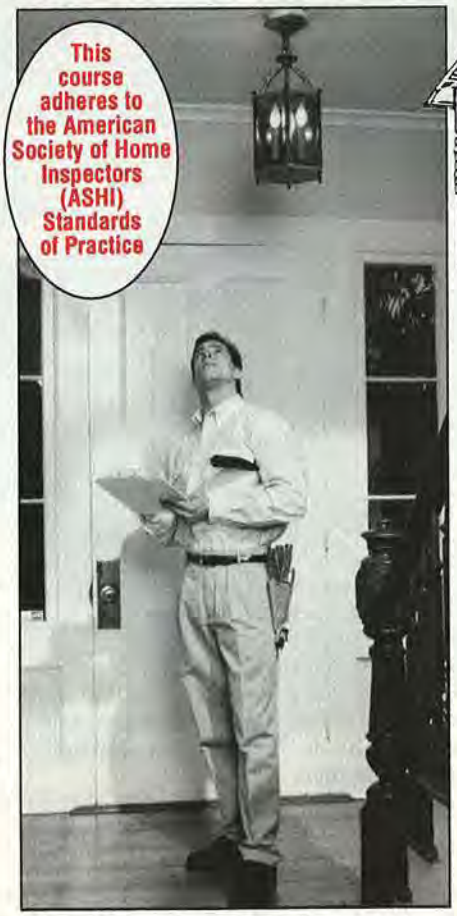

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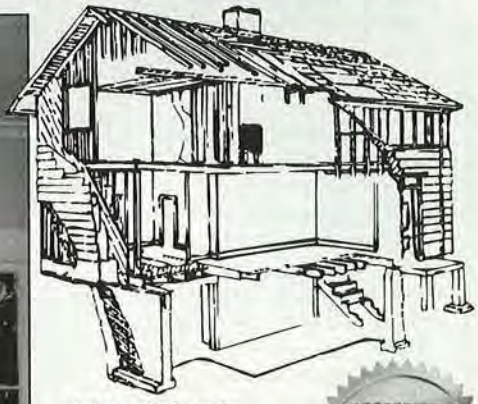

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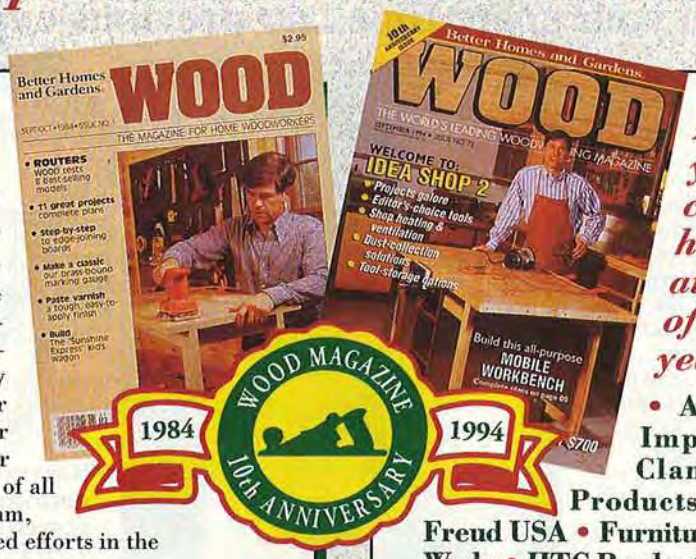

Dear Reader,

It's hard for me to believe, but this issue marks the 10th anniversary of *WOOD*® magazine, and our dedication to publishing the finest woodworking magazine anywhere. On this occasion, I'd like to personally thank you and the other 2.9 million readers for your loyal support during our first decade. And on behalf of all of us here on the *WOOD* team, I pledge to you our continued efforts in the years ahead.

WOOD magazine has evolved both graphically and editorially over the years, but our dedication to excellence has been a hallmark since the very first issue in September 1984. Our editorial mission has remained the same, too. "Our goal is to create an editorial product that serves the home woodworker better and more broadly than any competing woodworking publication and in more depth and singleness of purpose than the mechanics and how-to magazines. Specifically, it's designed to reach out to woodworkers and supply them with the kinds of ideas, information, and instruction that will help them improve their level of craftsmanship and, in the process, feel good about themselves and their hobby."

It is with this mission in mind that we conceive of, plan, research, write, and present every article that goes into the magazine. And, of course, it's why we shop-test all of the woodworking projects and techniques, and go out of our way to ensure that the information we present is fresh and up-to-date and of practical benefit to you as a home hobbyist woodworker.

Once again, thanks for your past support, and here's to a long, lasting relationship between us.

Best regards,

Larry Clayton

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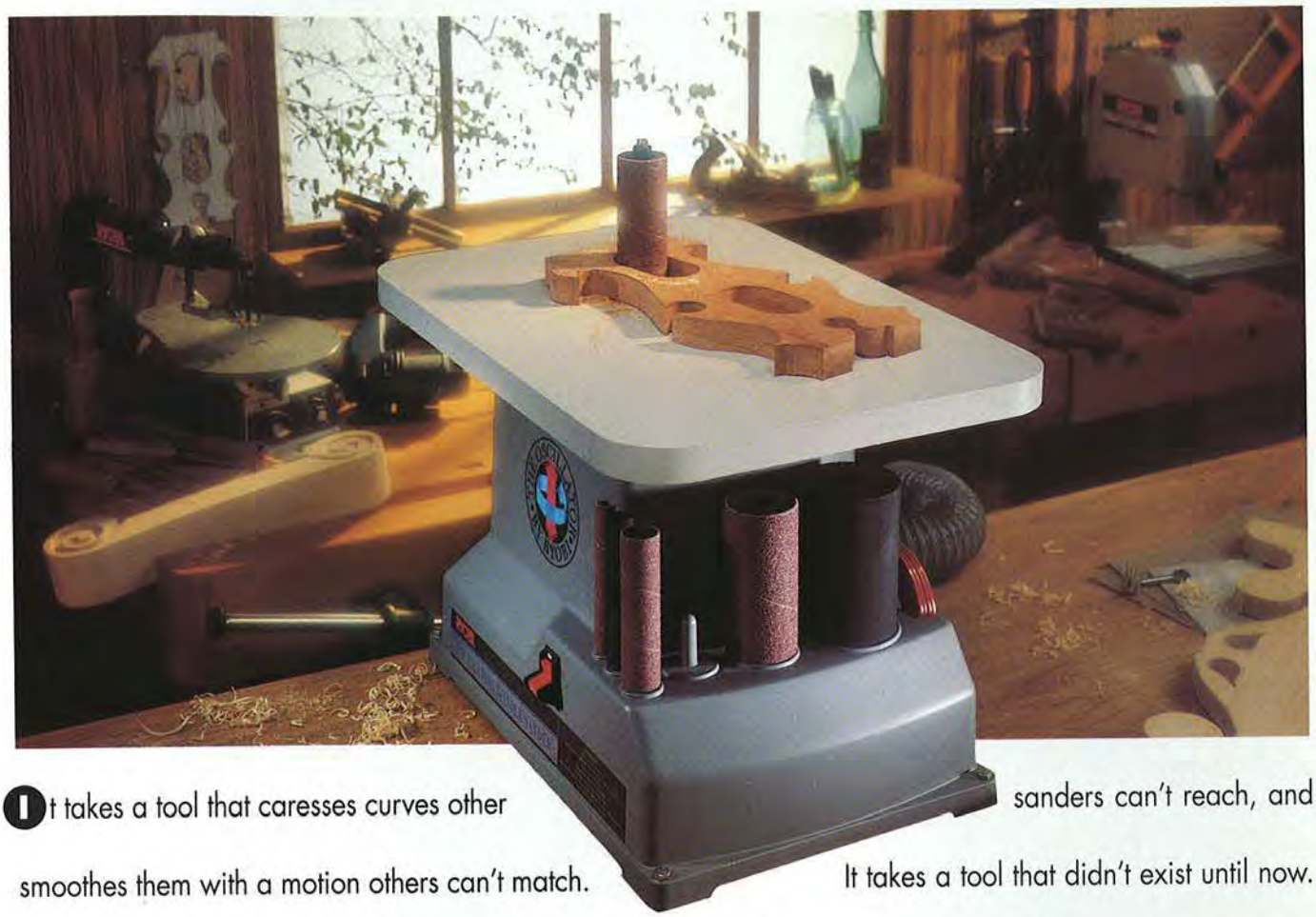

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- 2-KNIFE CUTTERHEAD

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- PRECISION LEVER LOCK FENCE SYSTEM
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1 1/2 H.P. WOOD SHAPER

- 110/220V, 7,000/10,000 R.P.M.
- 1/2" & 3/4" SPINDLES
- CAST IRON TABLE

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3 H.P. HEAVY DUTY WOOD SHAPER

- 220V, 7,000/10,000 R.P.M.
- 1/2", 3/4" & 1" SPINDLES
- CAST IRON TABLE

*EN3303
REG.:$785.00
SALE:
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3 H.P. SLIDING TABLE WOOD SHAPER

- 220V, 7,000/10,000 R.P.M.
- 24" X 9" SLIDING TABLE
- 1/2", 3/4" & 1" SPINDLES

*EN3304
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- MITER GAUGE
- ADJUSTABLE TABLE 0-45°

*EN-SN69
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- 6" X 80" BELT
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- CAST IRON TABLE
- (MAGNETIC SWITCH IS OPTIONAL)

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